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MOLECULAR BIOLOGY
NEWSLETTER

Georg-August-Universität Göttingen · International Max Planck Research School

Welcome message

Dear alumni, students, friends, and colleagues,
2025 is shaping up to be a remarkable year for our International Max Planck Research School (IMPRS) for Molecular Biology as we mark a major milestone — our **25th Anniversary!** This special occasion will be celebrated from **September 12-14, 2025**, in collaboration with our Neuroscience colleagues. We warmly invite all current and former members of our programs to join us, and yes, families are welcome too! With more then 500 guests expected, we have moved the Saturday event from the MPI-NAT to the Stadthalle Göttingen to ensure ample space for everyone.

Molbio PhD Retreat 2024 in the historic city of Weimar

Leading up to the festivities, the **Horizons Symposium** will showcase alumni contributions at the **Career Fair**, invited talks, and posters. The scientific highlights of the week will be extraordinary, featuring **Nobel Prize Laureates: Thomas Südhof**, who will deliver the Horizons keynote lecture, and **Randy Schekman**, who will open the Anniversary Ceremony with a scientific keynote.

Another standout event in our anniversary calendar is the **joint PhD retreat** of our IMPRS for Molecular Biology and Neurosciences at **Harnack-Haus, Berlin from July 3-5, 2025**. This retreat promises a stimulating mix of scientific talks, poster sessions, and an alumni career forum, with ample opportunities for social interaction to strengthen the MolBio/Neuro network.

As we put together this newsletter, we are once again witnessing an overwhelming global interest in our program. This year, a staggering **941 students from 85 countries** applied for just **24 study places!** Final interviews will conclude by mid-February, and we eagerly anticipate welcoming the next cohort of exceptional students.

This newsletter is packed with fascinating stories from our community. Our **alumni share insights into their career journeys** — some embarking on the challenge of starting their own labs, while others reflect on balancing ambitious careers with family life. Florian, for instance, takes us through the launch of his third startup, an exciting venture at the intersection of biotechnology and deep tech. Meanwhile, several current and former PhD students have contributed to our **Science Spotlights**, offering fresh perspectives on cutting-edge research. There's also a special feature on our A**lumni Mentoring Program**, showcasing the meaningful connections it fosters.

No edition would be complete without reports from our **MSc and PhD retreats**, the **Master graduation ceremony**, our **welcome event for newcomers**, and a look back at the student-led **Horizons in Molecular Biology** conference.

CONTENT

In November 2024, our IMPRS played a key role in the **GGNB Science Day**, coinciding with the **Scientific Advisory Board (SAB)** site visit. A huge **THANK YOU** to all organizers and participants for making this event a success! The SAB praised our interactive and supportive spirit that fosters innovative science.

As we celebrate 25 years, we also take this opportunity to honor **Reinhard Jahn**, whose vision and dedication have shaped not just our IMPRS for Molecular Biology but also the broader reform of doctoral education in Germany and beyond. Following his retirement in December we extend our deepest gratitude for his unwavering support and mentorship.

We can't wait to celebrate with you this September — here's to 25 years of excellence, collaboration, and scientific discovery!

Peter Rehling, Marina Rodnina, Steffen Burkhardt

The synaptic ribbon orchestrates...

Inner Hair Cells (IHCs), the primary sensory receptor cells of the auditory system, form specialized synapses called ribbon synapses. These synapses show some of the most remarkable properties among all synapses, achieving tireless neurotransmission with great temporal fidelity and display a very distinctive molecular profile compared to canonical synapses in the brain. What makes these synapses stand out is the presence of an enigmatic, electron-dense structure from which these synapses derive their name - the synaptic ribbon. The ribbon tethers a halo of synaptic vesicles (SVs) close to the presynaptic active zone (AZ).

Despite decades of research, we do not understand the precise function of this structure, although it has been speculated that it may act as a "conveyor belt", directing SVs to the AZ for fast, precise and tonic neurotransmitter release, essential for the process of hearing. Another important function the ribbon may play is that of a super-scaffold orchestrating the spatial arrangement of presynaptic components, particularly vesicle release sites and voltage-gated Ca^{2+}-channels for efficient coordination of Ca^{2+} influx with subsequent exocytosis. However, little is understood about how the

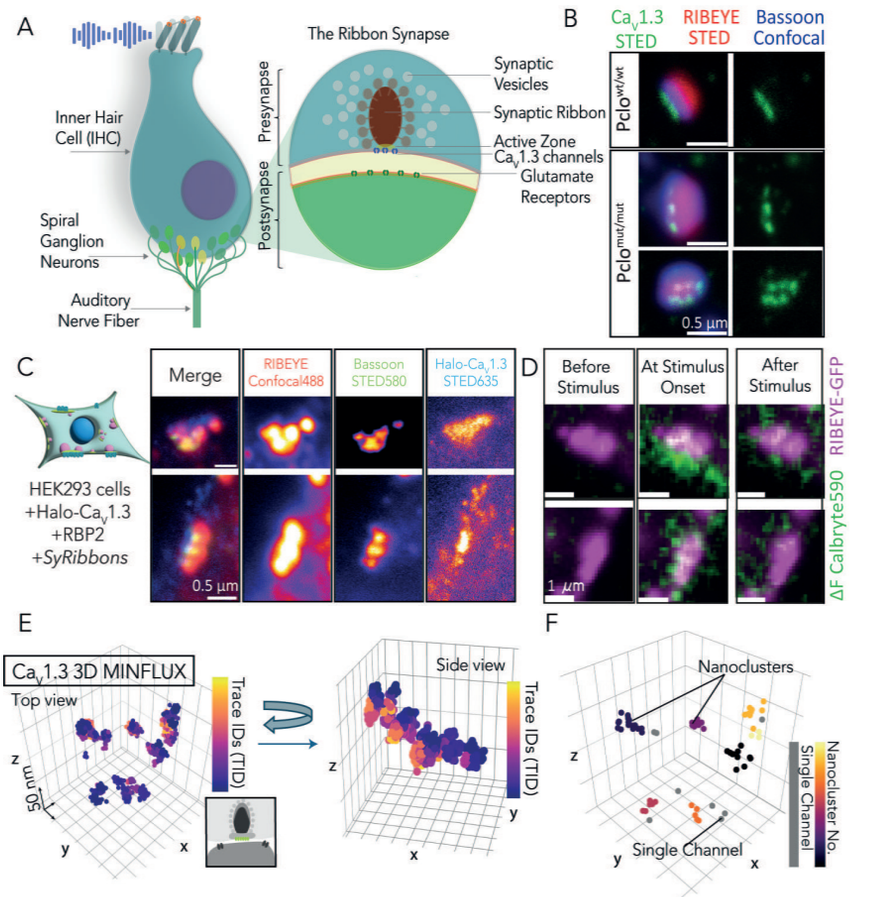

Fig. 1: (A) Schematic showing ribbon synapses of auditory IHCs. **(B)** STED images illustrating line-shaped CaV1.3 clusters in wild-type synapses. CaV1.3 clusters appear disorganized upon mutations of several AZ proteins including synapses of Piccolino mutants shown here. **(C)** Reconstituted synthetic ribbons (SyRibbons) in HEK293 cells recruit CaV1.3 clusters and form structures strikingly similar to IHC ribbon-type AZs. **(D)** Ca^{2+}-imaging shows localized Ca^{2+} influx at SyRibbons upon stimulation of HEK293 cells. **(E)** 3D-MINFLUX shows the complex topography of CaV1.3 from the top which appears linear when observed from the side. **(F)** Density-based clustering analysis reveals CaV1.3 appears in discrete nanoclusters at IHC synapses.

PhD- and MSc-related publications 2024 (current and former students of the Molecular Biology program in bold type)

Aich A, Boshnakovska A, Witte S, Gall T, Unthan-Fechner K, **Yousefi R**, Chowdhury A, Dahal D, Methi A, Kaufmann S, Silbern I, Prochazka J, Nichtova Z, Palkova M, Raishbrook M, Koubkova G, Sedlacek R, Tröder SE, Zevnik B, Riedel D, Michanski S, Möbius W, Ströbel P, Lüchtenborg C, Giavalisco P, Urlaub H, Fischer A, Brügger B, Jakobs S, Rehling P (2024) Defective mitochondrial COX1 translation due to loss of COX14 function triggers ROS-induced inflammation in mouse liver. Nat Commun 15(1), 6914

Aksu M, **Kumar P**, Güttler T, Taxer W, Gregor K, Mussil B, **Rymarenko O**, Stegmann KM, Dickmanns A, Gerber S, Reineking W, Schulz C, Henneck T, Mohamed A, Pohlmann G, Ramazanoglu M, Mese K, Gross U, Ben-Yedidia T, Ovadia O, Fischeri DW, Kamensky M, Reichman A, Baumgartner W, von Köckritz-Blickwede M, Dobbelstein M, Görlich D (2024) Nanobodies to multiple spike variants and inhalation of nanobody-containing aerosols neutralize SARS-CoV-2 in cell culture and hamsters. Antiviral Res 221, 105778

...Ca^{2+} channel topography

ribbon may do this and even less so about the precise topography of these components.

Voltage-gated Ca^{2+}-channels in IHCs, predominantly of type CaV1.3, are typically arranged in line-shaped clusters underneath the ribbon in the presynaptic membrane. Studies over years have shown that this clustered arrangement of CaV1.3 may be broken upon genetic perturbation of numerous AZ proteins, including deletion of the protein RIBEYE, the core protein constituting the ribbon. In a more recent study (part of my PhD), we investigated IHCs lacking the AZ protein Piccolino, which display smaller synaptic ribbons. This in turn seems to alter clustering of CaV1.3, further emphasizing on the importance of ribbons in organizing CaV1.3 clustering.

To better understand CaV1.3 clustering by the ribbon, we adopted a bottom-up approach to study the impact of a minimalist ribbon machinery in assembling CaV1.3 clusters in a synapse-naïve heterologous expression system. For this purpose, we established reconstitution of "synthetic" ribbons (SyRibbons) by expressing RIBEYE and a membrane-targeted version of the AZ protein Bassoon in HEK293 cells. We found that SyRibbons recruit CaV1.3 channels co-expressed in HEK cells and form structures strikingly reminiscent of IHC ribbon-type AZs. In fact, CaV1.3 clusters appeared larger in the presence of SyRibbons than in their absence and we could even show partial localization of Ca^{2+} signal at these SyRibbons using functional Ca^{2+} imaging. We could furthermore identify multi-domain AZ proteins RIM-BP2 and Bassoon to be necessary components which may link CaV1.3 to synaptic ribbons.

Lastly, to elucidate the nanotopography of CaV1.3 channels, we established the use of 3D-MINFLUX nanoscopy on inner ear tissue (publication in preparation), which allows us to look at these channel clusters with a single-digit nanometer spatial resolution. We could estimate counts of channels, and interestingly observed that CaV1.3 channels occur in discrete nanoclusters arranged in a narrow line underneath the ribbon. Spatial statistics analysis corroborated such a higher-order organization of CaV1.3 and we propose that these nanoclusters may possibly serve as functional modules in synaptic sound encoding. Future work will involve studying the physiological advantage of such topography.

In summary, our data provides a detailed understanding of the nanoarchitecture of these specialized synapses and the role of the ribbon in organizing Ca^{2+}-channel spatial arrangement.

Rohan Kapoor completed his doctoral research in July 2024 in the institute of Tobias Moser at the University Medical Center Göttingen, where he currently works as a postdoctoral researcher.

Parts of these results were published in Michanski S*, Kapoor R*, Steyer AM, Möbius W, Früholz I, Ackermann F, Gültas M, Garner CC, Hamra FK, Neef J, Strenzke N, Moser T and Wichmann C (2023) EMBO Rep 24: e56702 (*equal contribution) and Kapoor R, Schwenzer N, Dresbach T, Lehnart SE, Moser T (2024) eLife 13:RP98254

Alsouri S, Ambrose A, Mougios N, **Paglilla N**, **Mayr F**, Choi K, Loeber J, Chapuy B, Haeupl B, Opazo F, Oellerich T, Gold M, Engelke M (2024) Actinin-4 controls survival signaling in B cells by limiting the lateral mobility of B-cell antigen receptors. Eur J Immunol 54(3), e2350774

Bandyra KJ, Froehlich KS, Vogel J, Rodnina M, **Goyal A**, Luisi B (2024) Cooperation of regulatory RNA and the RNA degradosome in transcript surveillance. Nucleic Acids Res 52(15), 9161-9173

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Chen H, **Monga M**, Fang QH, Slitin L, Neef J, Chepurwar SS, Netto RCM, Lezirovitz K, Tabith A Jr, Benseler F, Brose N, Kusch K, Wichmann C, Strenzke N, Vona B, Preobraschenski J, Moser T (2024) Ca^{2+} binding to the C2E domain of otoferlin is required for hair cell exocytosis and hearing. Protein Cell 15(4), 305-312

DNA repair underlies the reproductive clock

Age-related DNA repair decline in oocytes reduces female reproductive potential

Over the last few decades, modern science has allowed us to age slower and live longer. In sharp and disappointing contrast, women's clocks of reproductive aging have not slowed. Women are born with millions of oocytes in their ovaries but lose more than 90% of this stockpile by the time they approach their mid-30s. Recent studies have identified persistent DNA damage as a primary contributor to oocyte loss. But why can this DNA damage not be repaired? In our recent study, published in Current Biology, I investigated how aging affects the capacity to repair DNA damage in oocytes.

First, we quantified DNA damage in human and mouse oocytes using γH2AX labeling and found significantly higher DNA damage levels in aged oocytes. We performed high-resolution light-sheet microscopy of DNA damage repair using 53BP1 and found that DNA damage foci persisted longer and had reduced mobility in aged oocytes. Fixed immunolabeling assays also confirmed that aged oocytes have a reduced capacity for DNA repair. We next wanted to understand how DNA repair was affected by aging.

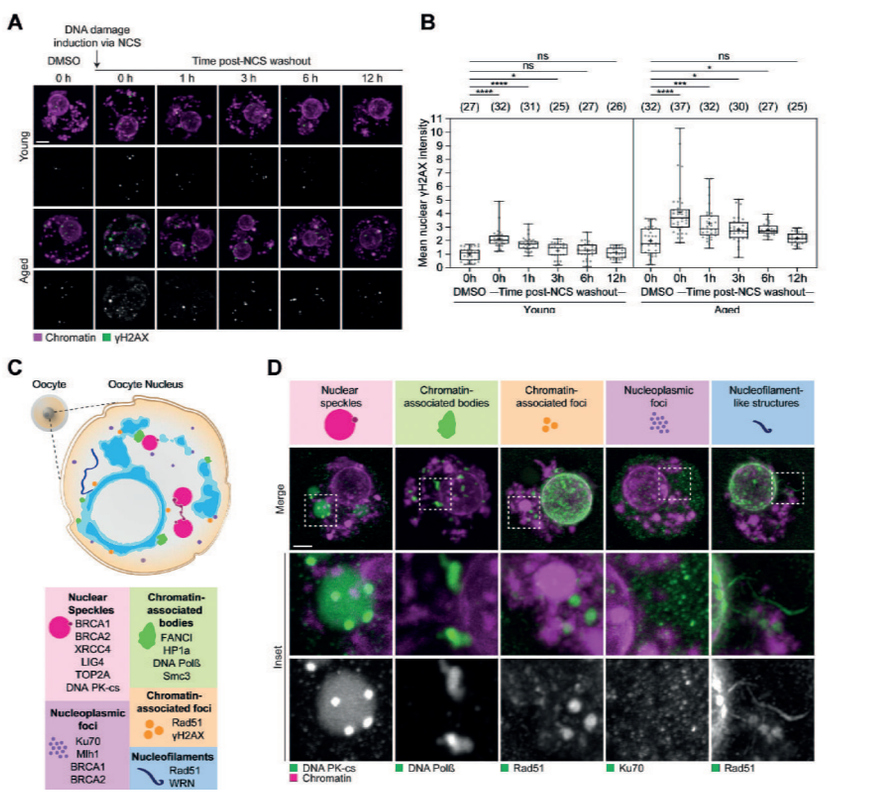

Fig. 1: (A) Immunofluorescence confocal images of nuclei of oocytes from young (8 weeks old) and aged (70–75 weeks old) mice treated with DMSO (control) or NCS, fixed at 0, 1, 3, 6, and 12 h after washout. Green, DNA damage (γH2AX); magenta, chromatin (Hoechst). (B) Quantification of normalized mean γH2AX fluorescence intensity in nuclei of young and aged oocytes following DNA damage induction and repair as shown in (A). (C) Schematic representation of a mouse oocyte and magnified nucleus depicting DNA repair compartments and their constituent repair proteins. (D) Immunofluorescence airy scan images of nuclei of oocytes from young (8 weeks old) mice labeled with DNA repair proteins representative of each DNA repair compartment. Green, DNA repair proteins; purple, chromatin (Hoechst).

Fianu I, Ochmann M, Walshe JL, Dybkov O, Cruz JN, Urlaub H, Cramer P (2024) Structural basis of Integrator-dependent RNA polymerase II termination. Nature 629(8010), 219-227

Filippopoulou C, **Thomé CC**, Perdikari S, Ntini E, Simos G, Bohnsack KE, Chachami G (2024) Hypoxia-driven deSUMOylation of EXOSC10 promotes adaptive changes in the transcriptome profile. Cell Mol Life Sci 81(1), 58

Harasimov K, Gorry RL, Welp LM, Penir SM, Horokhovskyi Y, Cheng SY, Takaoka K, Stuetzer A, Frombach AS, Tavares ALT, Raabe M, Haag S, **Saha D**, Grewe K, Schipper V, Rizzoli SO, Urlaub H, Liepe J, Schuh M (2024) The maintenance of oocytes in the mammalian ovary involves extreme protein longevity. Nat Cell Biol 26(7), 124-1138

Hintze A, Lange F, Steyer AM, **Anstatt J**, Möbius W, Jakobs S, Wichmann C (2024) Developmental changes of the mitochondria in the murine anteroventral cochlear nucleus. iScience 27(1), 108700

DNA repair underlies the reproductive clock (continued)

To understand the DNA repair landscape in oocyte nuclei, we performed super-resolution microscopy and mapped DNA repair proteins, finding them organized into distinct spatial compartments, including nuclear speckles, chromatin-associated bodies, and nucleofilaments. For the first time, we were able to image Rad51-positive nucleofilaments spanning large distances within the oocyte nucleus, forming straight, curved, and even branched structures. We found that DNA repair compartments in oocytes were often interconnected or positioned in close proximity to each other, suggesting coordinated assembly. DNA repair compartments fully assemble during late oogenesis as oocytes transition from the growing to the fully-grown stages. Growing oocytes lack certain repair compartments, limiting their ability to mount a full DNA repair response.

We found substantial alterations in these compartments with age, including changes in the levels of key DNA repair proteins and their response to induced DNA damage, particularly Rad51 and BRCA1, which are key players in homologous recombination. Our data suggest that homologous recombination is compromised in aged oocytes, leading to a reliance on error-prone Non-Homologous End Joining (NHEJ) DNA repair. This could explain the slight increase in mutations seen in oocytes from older women. Reduced HR efficiency might also result in poor genome editing outcomes in oocytes from older women, as HR is a crucial mechanism for precise DNA repair and insertion.

Lastly, we examined the role of aging chromatin in DNA repair. Using three different model systems of cohesin loss, we show that cohesin loss alone is sufficient to induce DNA damage in oocytes, with cohesin loss contributing to the age-related increase in DNA damage.

Incomplete repair of induced DNA damage in aged oocytes results in compromised chromosome integrity and partitioning, ultimately affecting oocyte quality. In summary, our study links DNA damage accumulation in aged oocytes—a key factor in declining reproductive potential—to cohesin deterioration and changes in the organization, abundance, and response of DNA repair machinery.

Ninadini Sharma completed her PhD in January 2023 under the supervision of Melina Schuh in the Department of Meiosis at the Max Planck Institute for Multidisciplinary Sciences, where she continued as a postdoc. In September 2024, Ninadini joined Caltech, Pasadena, California, USA as a postdoctoral researcher.

These results were published in Sharma N, Coticchio G, Borini A, Tachibana K, Nasmyth KA, Schuh M (2024) Changes in DNA repair compartments and cohesin loss promote DNA damage accumulation in aged oocytes. Curr Biol 34(22), 5131-5148.e6

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Kanwal N, Krogh N, **Memet I**, **Lemus-Diaz N**, **Thomé CC**, Welp LM, Mizi A, Hackert P, Papantonis A, Urlaub H, Nielsen H, Bohnsack KE, Bohnsack MT (2024) GPATCH4 regulates rRNA and snRNA 2'-O-methylation in both DHX15-dependent and DHX15-independent manners. Nucleic Acids Res 52(4), 1953-1974

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Kokic G, Yakoub G, van den Heuvel D, Wondergem AP, van der Meer PJ, van der Weegen Y, **Chernev A**, **Fianu I**, Fokkens TJ, Lorenz S, Urlaub H, Cramer P, Luijsterburg MS (2024) Structural basis for RNA polymerase II ubiquitylation and inactivation in transcription-coupled repair. Nat Struct Mol Biol 31(3), 536-547

How does the PIC disassemble?

Gene expression needs to be precisely controlled to ensure proper development of the organism. This is largely achieved through a process called transcription. Transcription by RNA polymerase II (Pol II) starts with the formation of the pre-initiation complex (PIC), which consists of Pol II and a set of general transcription factors (GTFs): TFIIA, TFIIB, TFIID, TFIIE, TFIIH and Mediator. Upon PIC positioning on the promoter, the translocase activity of TFIIH pumps downstream DNA into Pol II active center cleft and applies torque to induce melting of the DNA duplex. As RNA synthesis commences, the PIC transitions to an initially transcribing complex (ITC), which still contains GTFs. As the ITC synthesizes RNA, the upstream edge of the tran-

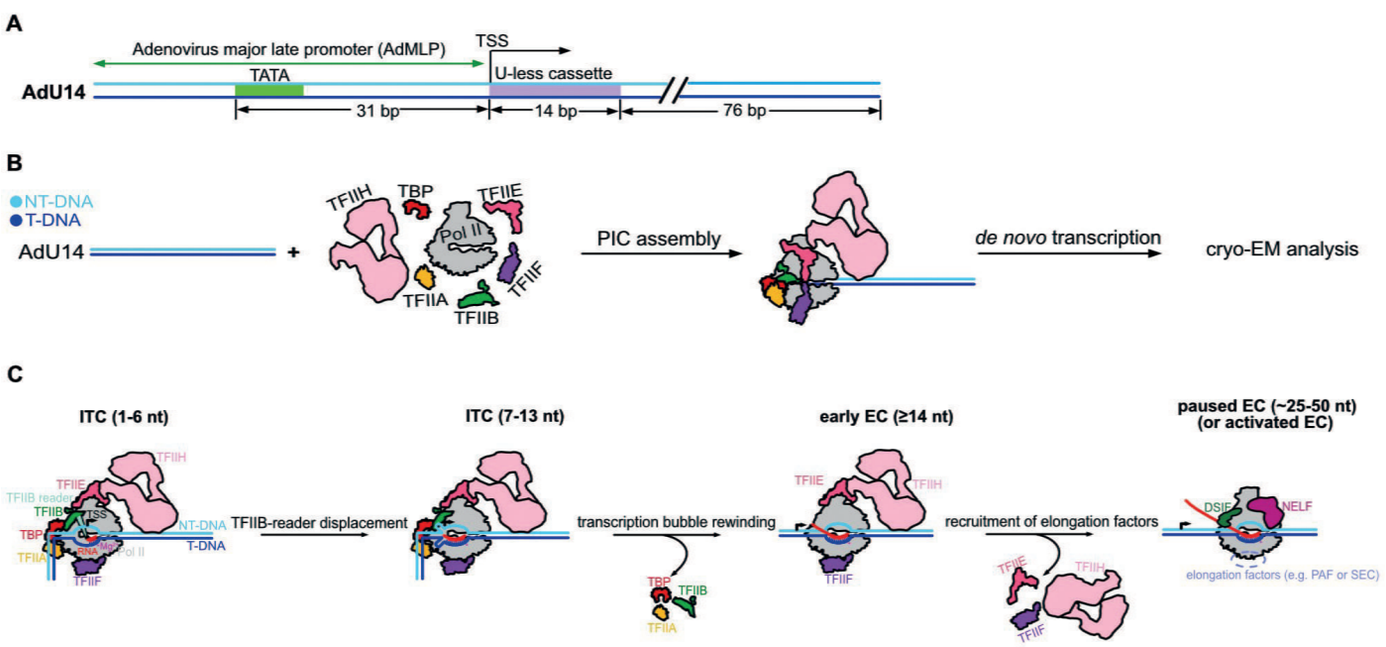

Fig. 1: Promoter escape by RNA polymerase II. (A) Scheme of the promoter DNA template used for cryo-EM. The TATA-box and U-less cassette are highlighted in green and purple, respectively. The length of the U-less cassette, the total length of DNA template and the distance between TSS and TATA box are indicated. **(B)** Scheme of experimental setup for cryo-EM sample preparation. NT-DNA, non-template DNA; T-DNA, template DNA. **(C)** Three-step model of promoter escape by mammalian Pol II. First, the RNA transcript competes with and eventually displaces the TFIIB-reader from the Pol II active center when the RNA is around 7-13 nt long. Second, rewinding of the upstream transcription bubble coincides with the eviction of the upstream promoter complex (TBP, TFIIA and TFIIB) from the Pol II surface. Finally, when the RNA is around 25-50 nt, DSIF and NELF are recruited to the early EC and facilitates the displacement of TFIIE and TFIIH. Association of elongation factors such as PAF or SEC likely displaces TFIIF.

Kumar P, Zhang XX, **Shaha R**, Kschischo M, Dobbelstein M (2024) Identification of antibody-resistant SARS-CoV-2 mutants via N4-Hydroxycytidine mutagenesis. Antiviral Res 231, 106006

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Li FX, Bahr JN, Bierth FAL, **Reshetniak S**, Tetzlaff C, Fornasiero EF, Wichmann C, Rizzoli S (2024) Morphological correlates of synaptic protein turnover in the mouse brain. Life Sci Alliance 7(11), e202402793

Mayr F, Kruse V, Fuhrmann DC, Wolf S, Löber J, Alsouri S, **Paglilla N**, Lee K, Brüne B, Zenz T, Häupl B, Oellerich T, Engelke M (2024) SH2 domain-containing inositol 5-phosphatases support the survival of Burkitt lymphoma cells by promoting energy metabolism. Haematologica 109(5), 1445-1459

How does the PIC disassemble? (continued)

scription bubble remains fixed while the downstream edge continuously expands, resulting in an extended transcription bubble. When the RNA reaches a certain length, the ITC is converted to an elongation complex (EC) and the transcribing complex escapes from the promoter region.

During promoter escape, the transcribing complex undergoes two main changes: 1. transcription bubble rewinding: the upstream end of the transcription bubble in the ITC abruptly closes; 2. the initiation factors are released from Pol II surface. Getting rid of the initiation machinery is a crucial event in early transcription and should be precisely regulated, as too early release of the GTFs would inhibit initiation while late release would prevent Pol II from entering productive elongation stage and hinder productive mRNA synthesis. However, how Pol II breaks the interactions with initiation factors is unknown.

To answer this question, we first established a highly efficient transcription initiation system by forming the PIC with mammalian Pol II and purified human initiation factors (TFIIA, TBP, TFIIB, TFIIF, TFIIE and TFIIH) on a closed promoter DNA. Then, we designed a DNA template (AdU14), which is a variant of the Adenovirus major late promoter (AdMLP) that contained an A-free region between the transcription start site (TSS, +1) and a first A-stop at +14 (Figure 1A). Finally, to understand the mechanisms of the transition, we prepared cryo-EM sample of the reaction mixture with AdU14 DNA promoter (Figure 1B) and computationally sorted out different states of transcription complexes in the process of promoter escape.

Structural studies of these intermediates, together with biochemical assays, allow us to conclude on a three-step model of promoter escape by mammalian Pol II (Figure 1C). First, when the RNA reaches around 6 nt, it starts to clash with the B-reader domain of TFIIB and eventually displaces it from the active site. When the RNA reaches around 13 nt, the transcription bubble rewinds from the upstream end and this coincides with the displacement of the upstream complex containing TFIIA, TFIIB and TBP. Transcription bubble rewinding marks the transition from an ITC to an early EC. The early EC still contains a subset of initiation factors (TFIIE, TFIIF and TFIIH). As the RNA grows, elongation factors are recruited and displace the rest of initiation factors. Displacement of all the initiation factors marks the end of promoter escape.

Yumeng Zhan is a doctoral researcher in the group of Patrick Cramer at the Max Planck Institute for Multidisciplinary Sciences.

These results were published in Zhan Y, Grabbe F, Oberbeckmann E, Dienemann C, Cramer P (2024) Three-step mechanism of promoter escape by RNA polymerase II. Mol Cell 84(9):1699-1710.e6

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The orchestrated start of protein production

From start codon search to ribosomal subunit joining

Translation initiation is the first and arguably the most critically regulated step in protein synthesis, during which mRNA is decoded by the ribosome to produce proteins - the essential building blocks of the cell. Translation initiation determines which genes are expressed and ensures that proteins are synthesized accurately. Dysregulation of translation initiation, in turn, can lead to defects in protein synthesis and has been implicated in the development of various diseases, ranging from cancer over viral infection to mental disorders.

Translation initiation in human cells involves locating the AUG start codon at the beginning of the open reading frame, committing to it through GTP hydrolysis, and joining of ribosomal subunits to form an 80S ribosome ready to begin protein synthesis. However, while there are various biochemical studies on the human system, the structural mechanism remains largely unresolved due to the inherent complexity of the process, defined by the need for precise and dynamic regulation of translation initiation in human cells.

To elucidate and visualize the multi-step pathway of translation initiation by

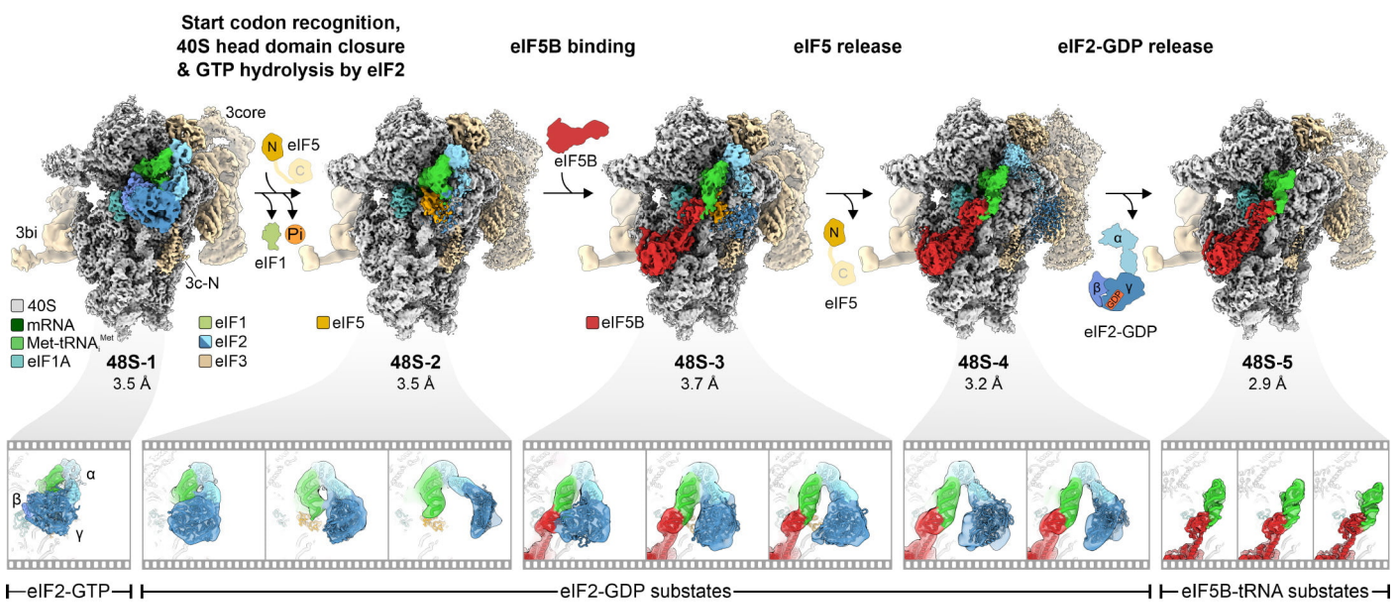

Fig. 1: "Molecular movie" of translation initiation by the 48S complex in human cells. Top: Cryo-EM structures of human 48S translation initiation complexes with distinct ligand composition. Bottom: Close-ups of conformational substates. Overall, the structures reveal the full pathway of 48S remodelling from initial start codon scanning towards the last state ready for 60S joining.

Sattmann J, Richter-Dennerlein R, Warscheid B, Dennerlein S, Rehling P (2024) Identification of TMEM126A as OXA1L-interacting protein reveals cotranslational quality control in mitochondria. Mol Cell 84(2), 345-358

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The orchestrated start of protein production (continued)

the so-called 48S complex, we reconstituted human translation initiation in vitro and captured its progression using high-resolution cryo-electron microscopy. Extensive data analysis revealed five distinct compositional states, outlining the sequential steps from start codon recognition to the formation of the late initiation complex ready for 60S subunit joining (Fig. 1). These findings represent a critical step in understanding translation initiation and its role in cellular function.

Our structural pathway begins with the 48S initiation complex with an open head conformation (48S-1 in Fig. 1), paused as it reads an upstream near-cognate AUC codon within the Kozak sequence context, which regulates the strength and efficiency of start codon recognition. The initiator Met-tRNA, carrying the first amino acid of the nascent protein, is a part of the ternary complex with the GTP-bound initiation factor (eIF), eIF2. Here, we were able to visualize the GTP binding pocket and observe how the ternary complex firmly binds the tRNA acceptor stem.

The next structure (48S-2) depicts how the correct AUG start codon is identified. AUG recognition by the 48S complex leads to initiation factors (eIFs) exchange and activation of GTP hydrolysis by eIF2. Upon GTP hydrolysis, we observe that eIF2 releases the tRNA acceptor stem, committing the 48S complex to the selected start codon. The subsequent structures resolve how these events then enable handover of the initiator tRNA from eIF2 to another factor, eIF5B, and trigger a multi-step remodeling of the entire 48S complex, preparing it for joining of the large ribosomal subunit (48S-3 to 48S-5).

One of the most intriguing discoveries was the identification of a built-in safety mechanism. The eIF3c subunit of the large 48S-bound eIF3 complex binds to the intersubunit space of the 48S complex and blocks premature joining of the ribosome's large subunit, ensuring that the process does not proceed until all the necessary steps are complete. We find that this safeguard is gradually removed during 48S remodeling, highlighting a fine-tuned quality control mechanism coupling 48S state with eIF3 conformation.

In conclusion, the present results reveal the intricate orchestration of translation initiation by the 48S complex, a key process in gene expression, which defines the composition of the human proteome. Our structures visualize the entire multi-step pathway of 48S remodeling, providing detailed mechanisms of start site selection and commitment upon GTP hydrolysis by eIF2, and showing how the multi-subunit eIF3 complex senses 48S state to control ribosomal subunit joining.

Valentyn Petrychenko completed his doctoral research in May 2025 in the group of Niels Fischer at the Max Planck Institute for Multidisciplinary Sciences, where he currently works as a postdoctoral researcher.

These results were published in Petrychenko V, Yi SH, Liedtke D, Peng BZ, Rodnina MV, Fischer N (2024) Structural basis for translational control by the human 48S initiation complex. Nat Struct Mol Biol, Sep 17, online ahead of print

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Unterauer EM, Boushehri SS, Jevdokimenko K, Masullo LA, Ganji M, **Sograte-Idrissi S**, Kowalewski R, Strauss S, Reinhardt SCM,

Cross-exon to cross-intron spliceosome

In the classical pre-mRNA splicing model, the spliceosome components U1 and U2 snRNPs are assembled at the two ends of the pre-mRNA intron (i.e., the cross-intron assembled spliceosome), recruit the U4/U6.U5 tri-snRNP, and catalyze the removal of the intron. This classical model is primarily based on studies over decades using *Saccharomyces cerevisiae* as a model organism. However, unlike the shorter introns in yeast (only 100-200 nts), in higher vertebrates such as humans, introns are much longer (averaging over 3000 nts), and exons are shorter (average length ~200 nts). Therefore, it was initially postulated over 20 years ago that in humans, the spliceosomes are assembled initially across an exon, and must be converted into a cross-intron spliceosome through an unknown molecular mechanism to mediate intron removal. However, this crucial molecular mechanism has remained elusive for the two decades.

To answer this question, we first purified the cross-exon assembled spliceosome and revealed its three-dimensional structure using single-particle cryo-electron microscopy. We found that the cross-exon assembled spliceosome remains at the pre-B complex stage, which includes all five snRNPs.

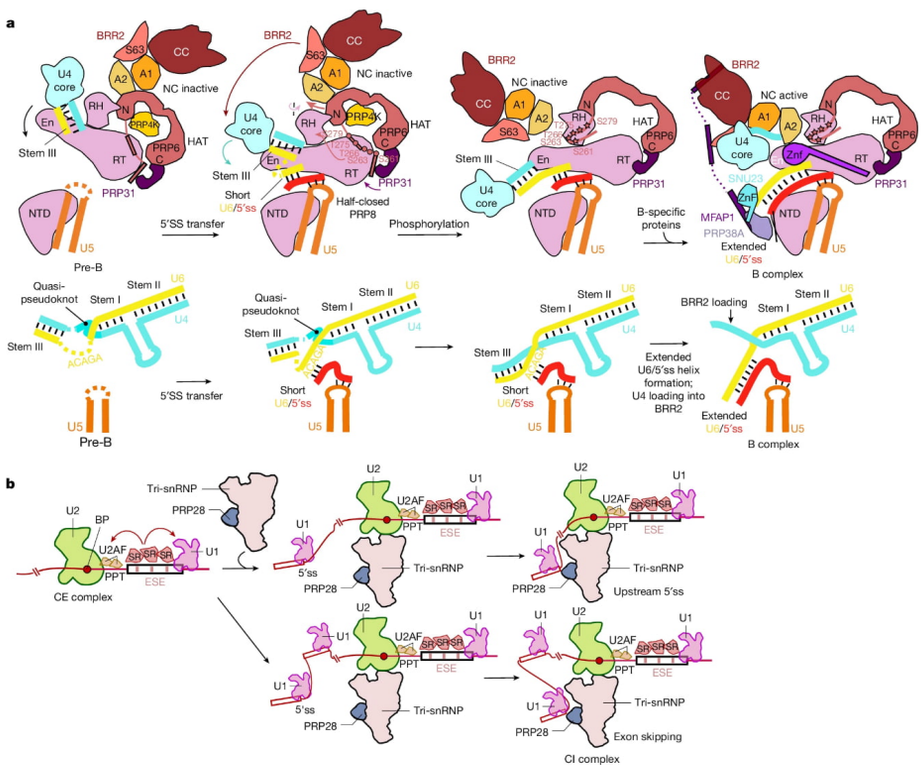

Fig. 1: a. Schematic of RNA remodelling (bottom) and rearrangement and repositioning of tri-snRNP proteins (top) during the pre-B to B-like to B complex transition. **b.** Model of the conversion of a CE to CI spliceosome, including alternative 5'ss/U1 snRNP choices.

Apart from a different positioning of the U1 snRNP, the U2-tri-snRNP part of this complex is similar to the previously published cross-intron assembled pre-B complex. By introducing exogenous oligonuclides containing the 5′ splice site (5′ss oligo), this cross-exon pre-B complex could be converted into

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Xu M, Ito-Kureha T, Kang HS, **Chernev A**, Raj T, Hoefig KP, Hohn C, Giesert F, Wang YH, Pan WL, Zietara N, Straub T, Feederle R, Daniel C, Adler B, König J, Feske S, Tsokos GC, Wurst W, Urlaub H, Sattler M, Kisielow J, Wulczyn FG, Lyszkiewicz M, Heissmeyer V (2024) The thymocyte-specific RNA-binding protein Arpp21 provides TCR repertoire diversity by binding to the 3′-UTR

Cross-exon to cross-intron spliceosome (continued)

a B-like complex, resembling the cross-intron B complex, further demonstrating the structural and functional similarity between the cross-exon and cross-intron assembled pre-B complexes.

Based on this finding, we reconstituted the intermediate state from pre-B to B-like complexes in vitro and revealed their three-dimensional structures of these intermediate states using single-particle cryo-EM. These five novel spliceosome intermediate states showed the molecular process of the conversion from the cross-exon pre-B complex to the cross-intron B complex (Figure 1a).

Unexpectedly, during the study, we discovered that the cross-exon assembled pre-B complex can form a dimeric state. In this dimerized spliceosome, each pre-B complex can interact with the U1 snRNP of another pre-B complex. This result suggests that during the transition from cross-exon to cross-intron, the tri-snRNP in the pre-B complex can directly interact with a U1 snRNP bound to the 5′ss and convert into a cross-intron spliceosome.

Based on these findings, we proposed a novel human spliceosome assembly model (Figure 1b). First, the exon recruit SR proteins and promote the binding of U2 and U1 snRNPs at both ends of the exon, forming a cross-exon complex. Subsequently, the tri-snRNP is recruited to the U2 snRNP, forming the cross-exon pre-B complex. This complex has a fully assembled U2-tri-snRNP unit and is prepared to bind to the U1 snRNP.

The splicing outcome then depends on which U1 snRNP is subsequently bound by the tri-snRNP: 1. If the U1 snRNP at the 5′ end of the intron is bound, the cross-exon complex transitions into a cross-intron complex, mediating classical splicing to remove the intron; 2. If the U1 snRNP of an upstream exon is bound, the cross-exon complex transitions into a cross-intron complex, skipping the intermediate exon; 3. If the U1 snRNP of a downstream exon is bound, reverse splicing is mediated, resulting in circular RNA (circRNA) formation; 4. If the U1 snRNP from another transcript is bound, trans-splicing is mediated.

In conclusion, this study reveals the detailed molecular process of how a cross-exon spliceosome is converted into a cross-intron one and proposes a novel human spliceosome assembly model that unifies seemingly unrelated and complex splicing regulatory mechanisms into a single framework.
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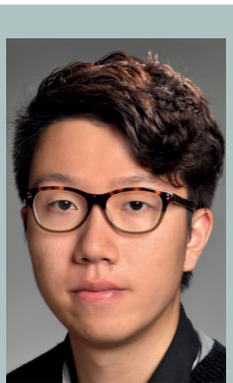
Zhenwei Zhang completed his doctoral research in December 2021 with Holger Stark at the Max Planck Institute for Multidisciplinary Sciences. Since 2023, Zhenwei is junior professor at Sichuan University, Chengdu, China.



These results were published in Zhang ZW, Kumar V, Dybkov O, Will CL, Zhong JY, Ludwig SEJ, Urlaub H, Kastner B, Stark H, Lührmann R (2024) Structural insights into the cross-exon to cross-intron spliceosome switch. Nature 630, 1012-1019

and promoting Rag1 mRNA expression. Nat Commun 15(1), 2194

Zhan Y, Grabbe F, Oberbeckmann E, Dienemann C, Cramer P (2024) Three-step mechanism of promoter escape by RNA polymerase II. Mol Cell 84(9):1699-1710.e6

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Zhang ZW, Kumar V, Dybkov O, Will CL, Zhong JY, Ludwig SEJ, Urlaub H, Kastner B, Stark H, Lührmann R (2024) Structural insights into the cross-exon to cross-intron spliceosome switch. Nature 630, 1012-1019

Zhao Y, Fang QH, Sharma S, **Jakhanwal S**, Jahn R, Lindau M (2024) All SNAP25 molecules in the vesicle-plasma membrane contact zone change conformation during vesicle priming. Proc Natl Acad Sci USA 121(2), e2309161121

New Students

Master's class of 2024/25

Dilnaz Begenova
Kazakhstan
Nazarbayev University
Bachelor of Science
Microbiology, Molecular Biology, Developmental Biology
https://www.uni-goettingen.de/en/689442.html

Kevin Alexis Castillo Mendieta
Ecuador
Yachay Tech University
Bachelor of Science
Biology
https://www.uni-goettingen.de/en/689445.html

Andrei Phillip David
Philippines
University of the Philippines Diliman
Bachelor of Science
Cell and Molecular Biology
https://www.uni-goettingen.de/en/689446.html

Ann-July Ellenrieder
Germany
Georg-August Universität Göttingen
Bachelor of Science
Molecular Medicine
https://www.uni-goettingen.de/en/689447.html

Nikolay Grushetskiy
Russian Federation
Lomonosov Moscow State University
Bachelor of Science
Molecular Biology
https://www.uni-goettingen.de/en/689448.html

Bjarne Hastedt
Germany
Christian Albrecht University of Kiel
Bachelor of Science
Biochemistry and Molecular Biology
https://www.uni-goettingen.de/en/689449.html

Liudmila Ivanova
Russian Federation
Lomonosov Moscow State University
Bachelor of Science
Molecular Biology
https://www.uni-goettingen.de/en/689450.html

Vasilisa Kalinkina
Russian Federation
Lomonosov Moscow State University
Bachelor of Science
Cell and Developmental Biology
https://www.uni-goettingen.de/en/689451.html

Shreya Kandpal
India
Tata Institute of Fundamental Research
Master of Science
Biochemistry and Cell Biology
https://www.uni-goettingen.de/en/689452.html

Karim Karimli
Azerbaijan
Middle East Technical University, Ankar, Turkey
Bachelor of Science
Molecular Biology and Genetics
https://www.uni-goettingen.de/en/689453.html

Nihan Koç
Turkey
Acıbadem Mehmet Ali Aydınlar University
Bachelor of Science
Molecular Biology and Genetics
https://www.uni-goettingen.de/en/689454.html

Olga Kondrateva
Russian Federation
Pirogov Russian National Research Medical University, Moscow
Bachelor of Science (with distinction)
Molecular and Cell Biology, Genetics
https://www.uni-goettingen.de/en/689455.html

Master‘s class of 2024/25

Leonie Marleaux
Germany
Georg-August Universität Göttingen
Bachelor of Science
Biochemistry
https://www.uni-goettingen.de/en/689458.html

Ariana Noghreh
Iran
Middle East Technical University, Ankara, Turkey
Bachelor of Science
Biology
https://www.uni-goettingen.de/en/689459.html

Mariam Nozadze
Georgia
San Diego State University Georgia
Tbilisi State University
Bachelor of Science
Chemistry, Biochemistry
https://www.uni-goettingen.de/en/689460.html

Esat Beray Özerdem
Turkey
Middle East Technical University, Ankara, Turkey
Bachelor of Science
Molecular Biology, Biochemistry, Epigenetics, Single-molecule Biophysics
https://www.uni-goettingen.de/en/689461.html

Zhiting Pan
China
Constructor University Bremen
Bachelor of Science
Biochemistry and Cell Biology
https://www.uni-goettingen.de/en/689462.html

Nathan Shembri Rodgers
Malta
University of Malta
Bachelor of Science
Medical Biochemistry
https://www.uni-goettingen.de/en/689463.html

Milad Shahbazi
Iran
Isfahan University
Bachelor of Science
Animal Biology
https://www.uni-goettingen.de/en/689465.html

Hanlu Shen
China
Imperial College London
Master of Science
Biological Sciences
https://www.uni-goettingen.de/en/689466.html

Lotta tom Dieck
Germany
Philipps University Marburg
Bachelor of Science
Biomedical Sciences
https://www.uni-goettingen.de/en/689467.html

Julia Wiedemann
Germany
Georg-August Universität Göttingen
Bachelor of Science
Molecular Medicine
https://www.uni-goettingen.de/en/689468.html

Hunter Woosley
United States of America
University of Kansas
Bachelor of Arts
Biochemistry, Physics
https://www.uni-goettingen.de/en/689469.html

Mariia Zelenskaia
Russian Federation
Georg August University of Göttingen
Bachelor of Science
Biology
https://www.uni-goettingen.de/en/689470.html

PhD projects started in 2024

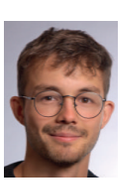
Sara Ahrari
Mechanisms of transcription regulation throughout the cell cycle.
Johannes Söding, Argyris Papantonis, Peter Lenart

Aysenur Canfes
Investigation of mitochondrial mRNA by super-resolution imaging.
Stefan Jakobs, Peter Rehling, André Fischer

Federico Carrozzo
High-resolution analysis of the 3D organization of a human centromere.
Marieke Oudelaar, Hauke Hillen, Peter Lenart

Ritabhas Das
Functional protein aggregation in ovarian follicles.
Melina Schuh, Ruben Fernandez-Busnadiego, Peter Lenart

May-Britt Decker
Nucleoside analogs as a potential anti-malaria drug.
Matthias Dobbelstein, Carsten Lüder, Hauke Hillen



Paul Felix Fritz
Investigation of single molecule dynamics in live cells using Minflux nanoscopy.
Peter Lenart, Claudia Steinem, Melina Schuh

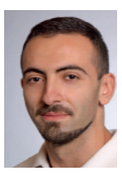
Amirhossein Hajialiasgary Najafabadi
Predictive modeling of peptide-MHC and TCR interactions for advancing autoimmune disease research and innovating generative AI in drug design.
Johannes Söding, Constantin Pape, Juliane Liepe

Chinzorig Jeppesen
Mechanism and function of rapid chromosome movements during meiotic recombination.
Melina Schuh, Ruben Fernandez-Busnadiego, Stefan Jakobs

Shantnu Kumar
Cotranslational interaction of small molecular chaperones with ribosome-nascent chain complex.
Marina Rodnina, Kai Tittmann, Sonja Lorenz

Chengkun Ma
Modulators of nuclear pore transport selectivity.
Dirk Görlich, Markus Bohnsack, Peter Lenart

Jaschka Nicol
Structural studies of RNA Polymerase II interactions in the nucleus.
Henning Urlaub, Elisa Oberbeckmann, Sonja Lorenz



Jonny Petrosyan
The role of mRNA modifications in the regulation of gene expression.
Katherine Bohnsack, Henning Urlaub, Argyris Papantonis

Hari Krishnan Radhakrishnan
Cancer immunotherapy approach based on targeting cancer-specific transcripts.
Johannes Söding, Matthias Dobbelstein, Peter Lenart

Adeeba Raydah
Studies of ovulation.
Melina Schuh, Henning Urlaub, Johannes Söding

Spyridoula Sagropoulou
Investigation of chromatin structure and function.
Marieke Oudelaar, Argyris Papantonis, Peter Lenart

Animan Tripathi
Mechanisms in Planarian gut branching morphogenesis and scaling.
Jochen Rink, Gregor Bucher, Peter Lenart

Honors / Awards

Faculty Members

Patrick Cramer was elected as a foreign member of the Royal Society.

Dirk Görlich received the Louis-Jeantet Prize for Medicine.

Jochen Rink was elected as a member of the European Molecular Biology Organization (EMBO).

Markus Zweckstetter received an ERC Advanced Grant.

Students (current and former)

Arjunn Bhatta received the PhD prize of the Göttingen Center for Molecular Biosciences (GZMB).

Nilanjan Ghosh Dastidar received the Best Poster Award at the Horizons in Molecular Biology PhD Symposium 2024.

Monica Gobran won the Three-Minute Thesis (3MT) Competition of the University of Göttingen.

Katharina Hoff received the Greifswald University Club Research Award in the Junior category.

Ida Jentoft received the Otto-Hahn Medal and the Otto-Hahn Award of the Max Planck Society.

Jonny Petrosyan received the GBM Master Award 2024 (see also p. 15 of this newsletter).

Panagiotis Poulis received the Otto-Hahn Medal of the Max Planck Society.

Ninadini Sharma was granted a Howard Garrison Advocacy Fellowship by the Federation of American Societies for Experimental Biology / Developmental Biology. She also received the Campus Seminar Communication Award by the Manfred Eigen Foundation and MPI-NAT.

Summa cum laude distinctions for their doctoral theses and defense in 2024 were awarded to **Arjun Bhatta**, **Rohan Kapoor, Nicole Kleiber, Atmika Paul** and **Alexander Rotsch**.

Congratulations!

GBM Master Award for Jonny Petrosyan

We congratulate Jonny, who received the GBM Master Award 2024, granted by the *Gesellschaft für Biochemie und Molekularbiologie* and donated jointly with *Springer Verlag,* for his excellent performance in his Master examinations and his Master thesis entitled "Domain characterization of the U6 snRNA m2G methyltransferase THUMPD2". This award is meant to be a distinction for graduated students who submitted an outstanding Master thesis in the molecular life sciences.

Jonny did his Master research in the Department of Molecular Biology (Bohnsack) at the University Medical Center Göttingen (UMG) under the supervision of Katherine Bohnsack. The photo was taken in October 2024 at the Molbio MSc graduation ceremony in the Manfred-Eigen Lecture Hall of the Max Planck Institute for Multidisciplinary Sciences.

Students Graduated

The Masters of 2024

Lavdije Ahmedi
(*Melina Schuh*)
Studies of protein aggregation in mouse oocytes.

Sara Ahrari
(*Kristina Zumer*)
Role of chromatin remodeler CHD2 in RNA Pol II transcription regulation in human cells.

Vaishnavi Arunkumar Menon (*Marina Rodnina*)
Visualization of the holotranslocon complex by colocalization of SecYEG, YidC and SecDF *in vivo* using FRET.

Aysenur Canfes
(Stefan Jakobs)
Investigation of mitochondrial F1FO-ATP synthase di- and oligomerization factors.

Federico Carrozzo
(*Marieke Oudelaar*)
High-resolution analysis of the three-dimensional organization of a human centromere.

May-Britt Decker
(*Melina Schuh*)
Investigating heteroplasmy in nucleoid populations.

Resul Elgin
(*Gesine Saher*)
Investigation of ketone body metabolism of mouse gut microbiome.

Morten Flieger
(*Sonja Lorenz*)
Redox regulation of the human ubiquitin-conjugating enzyme UBE2S.

P. Felix Fritz
(*Peter Lenart*)
Tracking formins as they add single monomers to actin filaments.

Amirhossein Hajialiasgary Najafabadi
(*Johannes Söding*)
Unveiling antigen presentation: Deep learning and modeling for peptide-MHC interaction.

Chinzorig Jeppesen
(*Melina Schuh*)
Role of centrosome and cilia in genetic recombination and progression through prophase I in oocytes.

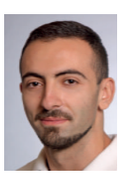
Zeynep Kılıç
(*Melina Schuh*)
Investigating follicular derived exosomal miRNA in young and aged murine ovaries.

Shantnu Kumar
(*Marina Rodnina*)
Human elongation factor eEF1B and small molecular chaperones in translation: a kinetic investigation.

Chengkun Ma
(*Dirk Görlich*)
Mixed FG domains and their impacts on FG phase properties.

Jaschka Nicol
(*Elisa Oberbeckmann*)
Cryo-EM studies on RNA-polymerase II dependent transcription initiation in budding yeast.

Ingrid Camila Peñaloza Ortega (*Argyris Papantonis*)
Probing RNA polymerase II function in human chromosome folding.

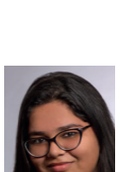


Jonny Petrosyan
(*Katherine Bohnsack*)
Domain characterization of the U6 snRNA m2G methyltransferase THUMPD2.

Hari Krishnan Radhakrishnan (*Dirk Görlich*)
Inhibitory nanobodies against Aladin to study nuclear pore complex assembly.

Adeeba Raydah
(*Michael Engelke*)
The role of trafficking regulators in the B cell antigen receptor-induced recruitment of signalin droplets.

Spyridoula Sagropoulou
(*Marieke Oudelaar*)
Optogenetics-based investigation of the role of transcription factors in genome organization and regulation.



Nandika Sahani
(*Maria Sokolova*)
Functional and structural characterization of the transfer messenger RNA in crAss-like phage phi14:2.

The Masters of 2024 (continued)

Juan Tasis Galarza
(*Niels Fischer*)
Structural dynamics of late human translation initiation by electron cryomicroscopy.

Animan Tripathi
(*Jochen Rink*)
Molecular underpinnings of head and tail regeneration in non-model flatworm *Stenostomum brevipharyngium*

Lukas Widmer
(*Ufuk Günesdogan*)
Unravelling gene regulatory networks: Site-specific transcription factor depletion using TEVp-dCas9.

The Doctors of 2024

Arjun Bhatta
Structural basis of human mitochondrial RNA processing.
Hauke Hillen,
Kai Heimel,
Stefan Jakobs

Barbora Knotková
Reconstitution and molecular characterization of the mitochondrial membrane contact site.
Michael Meinecke,
Sivio Rizzoli,
Marina Rodnina

Alexander Rotsch
Structural and biochemical studies on co-transcriptional endonuclease reactions.
Patrick Cramer,
Hauke Hillen,
Stefan Pöhlmann

Aybeg Günenç
Structural and mechanistic interrogation of the fatty acid biosynthesis machinery.
Holger Stark,
Jörg Stülke,
Henning Urlaub

Mehar Monga
Biochemical characterization of Otoferlin, the Ca^{2+} sensor for exocytosis at inner hair cell synapses.
Julia Preobraschenski,
Silvio Rizzoli,
Holger Stark

Jennifer Struck
Transport mechanisms of the putative vesicular nucleotide transporter VNUT.
Reinhard Jahn,
Silvio Rizzoli,
Claudia Steinem

Rohan Kapoor
Molecular physiology of synaptic sound encoding.
Tobias Moser,
Erwin Neher,
Silvio Rizzoli

Nadia Paglilla
Dynamics and composition of signaling droplets reveal an impact of cellular transport during B cell activation.
Michael Engelke,
Henning Urlaub,
Lutz Walter

Yuliia Tereshchenko
Characterization of testosterone and androgen receptor action in human and rhesus macaque heart muscle cells.
Rüdiger Behr,
Stefan Jakobs,
Ufuk Günesdogan

Nicole Kleiber
Molecular mechanisms and cellular functions of RNA methyltransferases targeting non-coding RNAs.
Markus Bohnsack,
Claudia Höbartner,
Peter Rehling

Atmika Paul
Characterization of tumor suppressor SMAD4 as a novel regulator of genome instability in human cancer.
Holger Bastians,
Jürgen Wienands,
Rüdiger Behr

Yajie Zhu
Resolving chromatin interaction and transcriptional networks in mammalian nuclei.
Argyris Papantonis,
Johannes Söding,
Tim Beißbarth

Fianu lab launches at Caltech: A dream realized

On October 26, 2024, I departed Frankfurt Airport on a one-way flight to Los Angeles. After many rewarding years in Göttingen, I bid farewell to my dear friends and colleagues, embarking on an exciting new chapter: establishing my laboratory at the California Institute of Technology (Caltech). The following paragraphs will share my reflections on my path to this point, and I hope to inspire some of you.

Saying Goodbye to friends in Göttingen at the Schillerwiesen

I joined our MSc/PhD Molecular Biology program in 2014. This opportunity fostered significant personal and professional growth, and the program's multidisciplinary nature completely reshaped my scientific interests. My dream of becoming an independent scientist predated my arrival in Göttingen, but my specific research focus remained flexible, likely due to my limited prior exposure. The Molecular Biology program ignited my passion for structural biology and transcription, and I was fortunate to find a spot in the laboratory of Prof. Patrick Cramer where I got world-class training in a supportive environment. The program also broadened my career perspectives, fostering a healthier, more adaptable mindset towards the realities of the competitive academic job market.

Landing an academic position demands a strong CV, including impactful publications. To this end, I disregarded advise to play safe, and driven by my curiosity and a touch of naiveté, I chose a project that I had to develop from scratch for my PhD. This meant a potentially high impact but difficult path to success. I genuinely enjoy science, and learned to persevere through the frustrations and the delayed gratification inherent in my chosen question. I owned my project and believed in its potential impact in the field of transcription and gene regulation. Exciting results emerged finally but the pandemic struck, forcing me to write my thesis and defend without a publication. Unfortunately, another group published similar findings shortly after my defense (We were scooped). I was devastated.

During the winter 2020 lockdown, I not only completed and defended my PhD but also design experiments, and develop a new side project as a backup plan. I aimed to secure a publication from a brief postdoctoral spell in Göttingen, and I began working on these projects as soon as possible. Fast forward to the end of 2021, we successfully published the results of both projects. In a twist of fate, both papers scooped my competitors, leading to a 2:1 scoreline. During this period, the Integrator complex—a previously obscure transcription regulator became a hot topic, and my contributions proved impactful. Looking back, I'm grateful that my curiosity, vision, and even my naiveté, guided the choice of my PhD project.

I began realistically considering my dream of becoming a professor. At this point, I faced a critical decision: staying on to complete a follow-up project or pursuing a second, more traditional postdoc elsewhere. While remaining in the same lab for both PhD and postdoc is generally discouraged, leaving would significantly prolong my timeline. Attending the ASBMB Transcription and Chromatin meeting in Snowbird, Utah in 2022, proved pivotal to my decision. The conference significantly expanded my network and my research received considerable attention culminating in two unexpected invitations to apply for faculty positions. While feeling unprepared, I used this as an opportunity to learn the application process. More importantly, the meeting reinforced that my CV was already quite competitive. Therefore, I decided to stay in Göttingen to wrap up a followed project with great support from my Patrick.

2023 was an intense year. I completed and submitted the follow-up project to Nature, serving as co-corresponding author, which solidified my authority on the work. While preparing the manuscript, I

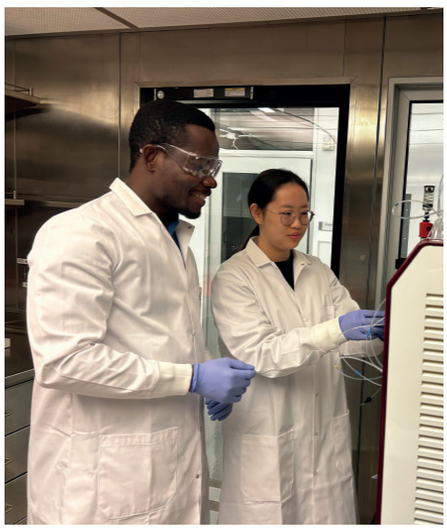
Isaac Fianu completed his doctoral research in 2020 in the lab of Patrick Cramer at the Max Planck Institute for Multidisciplinary Sciences, where he stayed for his postdoctoral research until October 2024. Isaac is now establishing is own lab as assistant professor at the California Institute of Technology in Pasadena. California, USA.

Fianu lab launches at Caltech: A dream realized (continued)

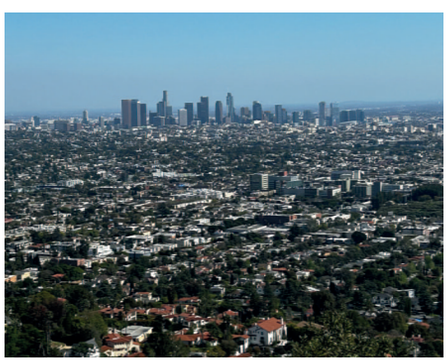
also developed my application materials tailored for US academic positions. After manuscript submission, I updated my CV and applied to top institutions known for their excellent facilities and warm climate. This led to a series of late-night Zoom interviews and 2023 ended with invitations for in-person interviews. Thankfully, the interviews were schedule in a way that I can fit them in one big trip to the US at the beginning of 2024.

Following a month of interviews across three states and four universities, I had a short holiday in the warm climate and beautiful landscape of Southern California, escaping some of Göttingen's winter. I enjoyed the interviews including the mysterious 'chalk talk', and meetings with trainees and faculty members. While confident in my performance, I knew the outcome wasn't solely dependent on my efforts. The waiting period was short, and the phone calls started coming. I received offers from all four institutions and spent another month visiting and negotiating. Ultimately, I accepted Caltech's offer to establish the Fianu Laboratory in Pasadena. This was a dream realized through hard work, fortunate circumstances, and seizing opportunities.

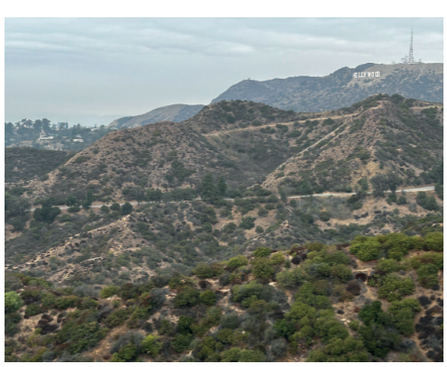
While this next chapter is not without challenges, I focus on the exciting discoveries that are blended into these challenges. I'm eager to apply my experience, develop new skills, and build a collaborative team to explore transcription regulation and its interplay with DNA replication. The first two months already provided valuable perspectives as I shift from being a Postdoc into the Faculty role. It's inspiring to watch, alongside my first two lab members, an empty room transform into a fully functional laboratory ready for experiments. If you are passionate about our research in a warm and collaborative setting, please contact me.



Purifying the first protein in Fianu lab with research assistant Tiao Tan



View of downtown LA from the Griffith Observatory



Mount Hollywood viewed from Griffith Observatory

There are numerous career options for a MolBio graduate. I chose the academic option and am delighted to share a few tips I found helpful in navigating the US academic job market.

Seek feedback: Ask people you trust to review your application materials. While you know your story best, ensure your message is clearly communicated. Address any ambiguity before your interviews.

Use your network: Reach out to people when you have specific questions. I got a lot of insights from recent Assistant Professors in the US including MolBio Alumnus Tino Pleiner (Stanford) who generously offered his time for a Zoom call.

Practice: Rehearse your job talk formally, presenting your ideas to diverse audiences. Don't hesitate to practice in front of a mirror. You need to get comfortable with your presentation and saying your ideas out loud.

Be yourself: You've spent years developing your unique approach; don't alter it before an interview. Authenticity is key, find out what works for you.

Stay Fit: Interviews are strenuous, especially across time zones. Maintain your physical and mental fitness routine throughout the process. Stamina and focus are crucial.

I'll conclude by expressing my sincere gratitude for the Molecular Biology program, for the wonderful colleagues I've met through this program and I'm delighted to have you in my network.

There and back again

How my scientific journey brought me back to the Caribbean

I grew up in Barranquilla, Colombia, where I attended a German school. From an early age, I was drawn to science as a way to ask questions about the nature of things. However, growing up in a region with a limited scientific tradition, I lacked local role models. Instead, I relied on examples from popular culture, mostly from outside Colombia, to piece together what it meant to be a scientist.

Eventually, I moved to Bogotá for my undergraduate studies, then to Göttingen for my Master's degree in the IMPRS MolBio program, and later to the tiny town of Plön for my doctoral research on the evolution of new genes. I trained as a molecular evolutionary biologist, studying the forces shaping genomes and how new genetic material arises. I spent almost seven years in Germany, followed by three more in the USA, at Princeton and Columbia University. Along the way, I experienced the stark contrasts between academic and non-academic life across the Caribbean, the Andes, Germany, and the American East Coast.

This path was both exciting and challenging. One of the most striking realizations came around my 30th birthday. While I had focused intensely on "becoming a scientist," I had given little thought to what it meant to "live as a scientist." I was, of course, interested in a tenured job, but my concerns had always been framed in academic terms: What kind of projects can we do here or there? Can I turn this idea into a job? Can this be interesting enough for the community to secure funding? I had never seriously asked myself: *Can this sustain me in meaningful ways for the next 30 to 40 years*? or *Will I be happy with this life when I look back decades from now*?

Rafik's Genomics and Biodiversity of the Caribbean team

Genomics workshop hosted by Rafik

I had assumed that my curiosity and eagerness to understand nature would be enough to keep me engaged. However, bouts of depression and anxiety, the reality of low postdoc salaries compared to non-academic careers, and the frustrations I saw in colleagues all piled up, making me question my future as a scientist. For the first time, science alone did not feel fulfilling.

This realization forced me to reimagine my path. I concluded that my work had to be science-related, meaningful, and impactful beyond the scientific community — it had to matter to people. Over time, I also found unexpected solace in the idea that any compelling scientific question I had, or would have in the future, could eventually be pursued by someone else. The once-dreaded possibility of being "scooped" began to feel like reassurance that my ideas were part of a larger intellectual ecosystem, where I could contribute in many ways — or not.

I also realized that while scientific ideas are universal, their location matters. I had spent years in world-class institutions but knew little about the scientific landscape of the place where I was born and raised. This led me to reconnect with my roots and ask myself: How can I contribute to producing the right conditions that would have kept me (or someone like me) from leaving home in the first place?

So, I decided to return to Colombia. After discussing with friends and colleagues, I felt that Bogotá already had some degree of scientific attention, whereas Barranquilla, in my home region, could greatly benefit from more focused efforts. I applied for

Rafik Neme Garrido received his MSc degree from the Molecular Biology program in 2011. After his PhD, followed by a two-year postdoc phase at the Max Planck Institute for Evolutionary Biology in Plön, Germany, Rafik moved to the Unites States, where he worked as postdoctoral research fellow at Columbia University and as guest research scholar at Princeton University. Since 2019, Rafik is assistant professor at the Universidad del Norte in Barranquilla, Colombia.

There and back again (continued)

a Pew Latin American Fellowship, which helped cover my salary at Columbia University while providing startup funds for my return. Additionally, I received generous support from the Max Planck Society in the form of a Partner Group between the Max Planck Institute for Evolutionary Biology and Universidad del Norte in Barranquilla, the top university in the Colombian Caribbean.

Rafik in his office

Early in the forest

Returning to Barranquilla was exhilarating. After 15 years away, I was a scientist ready to test my training. While much of my early career had been spent pondering abstract and philosophical problems (as my PhD advisor used to joke), I now wanted to focus on gathering biodiversity data to scientifically explore my home region and its educational challenges.

I initiated projects studying insect and plant diversity in the endangered Colombian tropical dry forest—an ecosystem severely impacted by human activity. My goal was to leverage my expertise in genomics to generate information that could contribute to land use and conservation decisions. But something unexpected started happening: my work began drifting away from molecular evolution as I engaged with broader ecological and conservation issues. Instead of diving deeper into extreme specialization, I found myself undergoing a process that felt more like dedifferentiation — a return to a more flexible, generalist way of thinking about science. The highly focused tools of my training remained valuable, but I was now applying them in a way that was more fluid, adapting to the needs of my environment rather than following a predefined research trajectory.

Of course, scientific life in Colombia posed difficulties. Research funding is scarce, bureaucracy is overwhelming, and it remains challenging to convey the importance of scientific research and education as tools for empowerment. However, I gradually attracted students from my university and neighboring institutions. My international experience and funding made it appealing for undergraduates to develop their scientific skills under my mentorship.

This was both exciting and daunting. I had to train myself in a completely new field while simultaneously training young scientists. It was often frustrating for everyone involved, and I had few reference points to guide me. This does not mean I was alone in this process — I have been fortunate enough to have encountered people who have supported this endeavor in many ways. Yet, this personal lack of precedent also gave me the freedom to experiment and build a small scientific community on my own terms — one that valued agency for every member, openness, hopeful science, and useful science (both for the scientist and their environment).

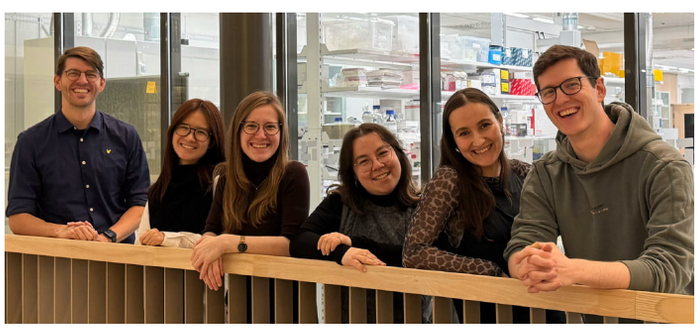
Embracing this perspective required letting go of many traditional academic expectations — productivity metrics, rankings, and global relevance. In the process, I realized how much these pressures had weighed on me unnecessarily. I no longer aspire to be a leading figure in any particular field. That doesn't mean I've given up on good science — it just means I prioritize doing science for its intrinsic effect on those who engage with it, rather than for external validation.

This all still feels like a beginning, and I look forward to how my perspective on all this will respond to this very special environment. We have only just started publishing our first manuscripts, but we have already produced exciting data on insects and forests, and launched a series of books to teach and inspire amateur entomologists of all ages.

Looking back, I see a full-circle journey: from a child in Barranquilla searching for a scientific identity, to a privileged researcher trained in some of the best universities available to me, and finally, back home, shaping a scientific space where others might not have to leave to pursue their dreams. I no longer worry about whether my work fits into global scientific trends — what matters is that it fits into the world I am trying to build.

Enjoy the scientific journey, ...

I needed to email my colleagues in the lab. I was stuck in traffic and might be delayed for our meeting. My email inbox showed a message from the European Commission with subject line "Evaluation results". My heart started racing, and I found myself in the unique state of agitated excitement. I opened the email, and I became euphoric: my proposal for the "European Research Council (ERC) Starting Grant 2023" call will be funded! What a relief after nearly one year of grant writing, interviewing and nervous waiting. The generous support from the ERC meant that I could build an independent lab and move on with my research ideas at the highest level in the future. In the present, my celebratory thoughts were interrupted because the cars ahead started moving too and I had to rush to arrive at my meeting. Yet, as I drove, a quiet reflection stayed with me: unlike our daily commute, a journey in science isn't just about reaching a destination. It's about every twist and turn along the way, each step that shapes the adventure.



The Ratz lab in January 2025

My own scientific journey started in 2012 as a PhD student in the lab of Stefan Jakobs within the department of Stefan Hell at the Max Planck Institute for Multidisciplinary Sciences. This was an extraordinary privilege for many reasons. I had the exciting chance to initiate, plan and execute a PhD project on endogenous fluorescent tagging of mammalian cells using the then brand-new method of CRISPR/Cas9 genome editing. The department itself was huge (50+ people) and interdisciplinary experts from around the globe created a unique work and social environment. Lastly, Stefan Hell received the Nobel Prize in Chemistry for his pioneering work in the field of super-resolution imaging in 2014. Within the department, this prestigious award was celebrated as a recognition of the entire team, with many members having collaborated for nearly 20 years to accomplish this breakthrough. I will remember the Hell department as an inspiring place with a culture of fearlessly tackling problems others deemed unsolvable.

As I approached the end of my PhD, I had the opportunity to attend a student-organized conference on molecular neurobiology at the Weizmann Institute in Israel. This experience sparked my fascination in molecular neuroscience and motivated me to join the lab of Jonas Frisén at Karolinska Institute in Sweden as a postdoc. One focus of the Frisén lab was to study the formation of new neurons in adult mouse brains. The lab had just developed an innovative method for high throughput spatial analysis of RNA expression in tissue sections. My task was to leverage my expertise in genome editing to establish a method for high throughput lineage tracing in the mouse brain *in vivo*. My problem was that I knew little about the mouse brain, less about lineage tracing and transcriptomics, and I had no hands-on expertise in bioinformatics. I knew that switching to an entirely new field would cost me time to acquire the necessary skills, but I was enthusiastic to embrace the challenge. Thankfully, I had all the support I could ask for from my mentor and colleagues. Fast forward a few years - through a global pandemic and a grueling, nearly two-year long review process - I successfully published a key paper. This milestone positioned me to apply for independent grants and group leader positions, paving the way for the next chapter of my scientific journey.

I spent several months crafting my job application following an iterative process: writing, seeking feedback, improving, and starting again. During the first half of 2022, I interviewed at several institutions in Sweden, Germany, and Italy. While I didn't receive any offers at the time, these experiences helped me uncover weaknesses in my research program and communication skills, giving me clear areas to work on. Attending selection symposia also provided an excellent opportunity to

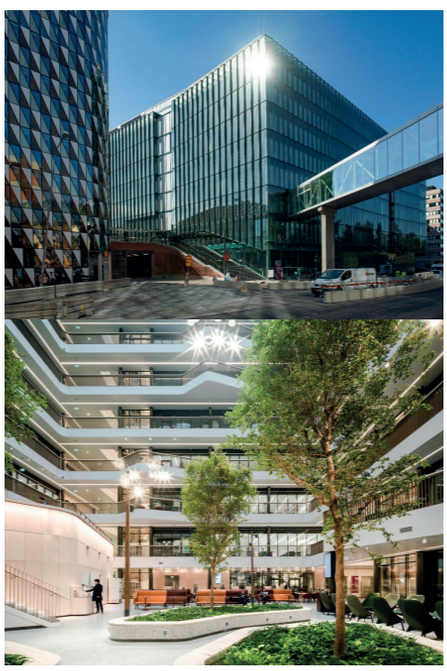
Michael Ratz completed his doctoral research in December 2015 in the lab of Stefan Jakobs at the Max Planck Institute for Multidisciplinary Sciences. In April 2016, Michael joined the Karolinska Institute in Stockholm, Sweden as a postdoctoral fellow. He was a researcher at KTH in Stockholm (2021-2023) and a visiting postdoc at Stanford University (2023). After his ERC Starting Grant got approved, Michael started his own lab as a group leader at Karolinska Institute in October 2023.

... not just the destination

expand my professional network. It was inspiring to meet other candidates, many of whom have since secured independent positions. After rejections, I often reached out to members of the selection committees to request specific feedback. This approach was highly effective - I received invaluable advice and constructive criticism from several esteemed scientists. Although I appreciated the professional growth that came from this period of self-reflection and learning, the reality remained: I still didn't have a job, and my postdoc contract was set to end within a year.

In the summer of 2022, I had the chance to spend a few weeks in California while on parental leave. Instead of focusing on job applications, I used the time to immerse myself in scientific literature, reading extensively and reaching out to lead authors via cold emails to ask if we could meet for a discussion. To my surprise, many responded positively, and I visited labs at UCSF, UC Berkeley, Stanford University, Caltech and UCLA to engage in conversations with some of the field's most accomplished scientists. I was impressed by their generosity in sharing their time and insights with me, despite their busy schedules. These discussions reassured me that my research ideas were on the right track - I "only" needed to find the right institutional fit.

My US stay was briefly interrupted when I returned to Stockholm in the fall of 2022. I wrote the ERC Starting Grant with TU Munich as my host institution. Those weeks were intense. Although I had a solid first draft of my scientific proposal early on, the grant writing process quickly became an endurance test. By the final week before submission, my library sessions stretched to 16 hours a day. In the end, my final proposal - a monumental 85 pages - was submitted a few minutes before the deadline. I was exhausted but also exhilarated at the prospect, however slim, that the project might be funded. It would take nearly a year before knowing the results though.



Our lab is located in Biomedicum (Karolinska Institute, Stockholm), a modern research center with indoor gardens

During my time in California, I had the opportunity to meet Karl Deisseroth at Stanford University. I was particularly interested in learning more about 3D intact-tissue RNA profiling, an exciting technique his lab had developed a few years before. In 2023, I was fortunate to spend six months as a visiting scholar in the Deisseroth lab. During this time, I gained hands-on experience with imaging-based RNA-sequencing and I learned about mouse models of autism. That same year, I had a few pivotal interviews that led to two major outcomes: my ERC proposal was approved, and I received an offer for a tenure-track assistant professorship at TU Munich. While the idea of returning to Germany was appealing, the ERC funding, combined with several key Swedish grants, provided me with a strong financial foundation to remain in Sweden. Furthermore, the Karolinska Institute offered an exceptional research environment, making my decision to stay an easy one.

Since October 2023, I have been a group leader at the Karolinska Institute. My lab is developing and applying novel genomic tools to explore the fundamental principles, or "wiring rules", that govern neuronal connectivity in the brain. We conduct comparative studies of single-neuron connectivity across different developmental stages and in models of neurodevelopmental disorders in vivo. While our primary focus is the mammalian brain, we've also initiated an exploratory project using zebrafish, benefiting from their rapid and accessible brain development ex utero. Though I enjoy performing experiments, reading papers, and mentoring students and postdocs, my responsibilities as a PI have significantly shifted. A considerable portion of my time is now devoted to meetings, grant writing, hiring, management, committee work, reviewing, conferences, and teaching. One of the greatest challenges has been to find time for reflective and creative thinking, as opposed to just ticking off boxes on a to-do list. To address this, I try to block off entire mornings or even entire days each week to focus on a single task.

Despite the challenges, I remain convinced that being a scientist is the best job in the world. I feel fortunate to have the resources, freedom, and a group of talented individuals who share my passion for learning, discovery, and creative inquiry. What more could one ask for to embark on a successful scientific journey?

My next venture: Unlocking the immune system

Deciphering the immune system to transform diagnostics and therapeutics

When my time at my first startup, Labforward, ended, I had a simple plan: take some time off, reflect, and explore my next steps. But life, as it often does, had other plans for me. It all began with a trip to Japan for a close friend's birthday, an event that turned out to be far more than just a celebration.

At the party, I met Daron Standley, a professor at Osaka University, and a friend of my friend. Daron had developed a groundbreaking algorithm addressing a fundamental challenge in adaptive immune repertoire analysis known as the 'low donor sharing' problem. Intrigued, I found myself diving into conversations about immunology, technology, and entrepreneurship - a combination that seamlessly built on my previous experiences in the startup world and was the starting point of my next (ad) venture.

Florian pitching MyImmune at an event at the Japan Innovation Campus in the Silicon Valley.
Image credits: Hiro Sogi for the Co-Creation Bureau, Osaka University.

The Low Donor Sharing Problem: Unlocking Immunological Insights

Understanding the significance of Daron's work required delving into the intricacies of the low donor sharing problem. Adaptive immunity, a fundamental aspect of our immune system, depends on B-cell and T-cell receptors to identify and combat diseases. These receptors are created through a random and highly individualized evolutionary process based on each person's genetic repertoire. As a result, patients with the same disease often share minimal, if any, overlap in their receptor sequences.

This variability has long hindered efforts to analyze and interpret immune repertoires. However, diseases such as infectious illnesses, autoimmune disorders, and cancers imprint specific, disease-related patterns onto a patient's adaptive immune system. These unique patterns, encoded in the B-cell and T-cell receptors, hold enormous potential for diagnostics - if they can be decrypted. Unlocking these personalized immune signatures enables highly precise, sensitive, and specific diagnostic applications.

Daron's algorithm successfully addresses this challenge. By overcoming the low donor sharing problem, it can identify disease-specific patterns within adaptive immune responses. This breakthrough not only opens new possibilities for advanced diagnostics but also paves the way for therapeutic innovations previously deemed unattainable.

The algorithm's potential goes far beyond diagnostics. By analyzing adaptive immune responses, it aggregates sequences from diverse donors into disease-specific, antigen, and epitope-specific clusters. These clusters are invaluable for identifying therapeutic antibodies, tumor-infiltrating lymphocytes, and disease-specific epitope patterns. This capability not only deepens our understanding of diseases but also enables the development of targeted, personalized therapies, particularly for underserved conditions such as autoimmune diseases and hard-to-treat cancers.

My next venture: Unlocking the immune system (continued)

From Idea to Startup: Building MyImmune

Fascinated by the potential of this technology, I was equally drawn to the entrepreneurial opportunity it presented. Daron was seeking someone to help commercialize the software, and I found the prospect too exciting to pass up. My sabbatical ended early, and I joined MyImmune.

Our founding team came together as a diverse group united by a shared vision. Alongside Daron and me were Ayan Sengupta, an AI Research Engineer passionate about biological challenges, and Songling Li, a bioinformatics expert with deep knowledge of the immune system. I felt incredibly fortunate to collaborate with such brilliant and dedicated individuals.

We set out to develop a commercialization strategy with diagnostics as our immediate focus. This use case leverages vast amounts of publicly available data and presents fewer regulatory barriers compared to therapeutic applications, while still offering significant market potential. From writing business plans and pitching to investors to incorporating the company and securing funding, the early days of MyImmune were a whirlwind of activity.

Bringing MyImmune to Life

Thanks to the support of Osaka University's Co-Creation Bureau, we secured pre-seed funding and built a team that now works full-time to advance MyImmune toward market readiness. The university's emphasis on fostering spin-offs provided invaluable resources and guidance, making Japan an exceptional launchpad for startups.

Milestones and Challenges

Developing a startup at the intersection of biotechnology and deep tech has been a rewarding challenge. Turning the intellectual property into a scalable, high-performance application was the first thing our tech team focused on. Once the foundation was in place, we began screening underserved diseases to assess their suitability for diagnosis using our platform. The results have been incredibly promising, highlighting the universal applicability of MyImmune's technology.

To attract international investors, we incorporated MyImmune as a Delaware C-Corporation. My prior experience with Labforward proved invaluable during this phase; I avoided many pitfalls and approached tasks with greater efficiency.

The Road Ahead

Our mission at MyImmune is ambitious but deeply fulfilling: to harness the immune system's potential for diagnosing, understanding, and treating diseases. The convergence of machine learning, AI, and immunology offers unprecedented opportunities to address pressing medical challenges.

For me personally, the journey has been a blend of scientific exploration and entrepreneurial growth. I've found great satisfaction in creating a company along the biotechnology value chain, building a deep tech product that has the potential to improve lives. My time at MyImmune has reaffirmed the importance of collaboration, innovation, and perseverance in tackling complex problems.

If you are curious about MyImmune's work or see potential for collaboration, please don't hesitate to reach out. Together, we can unlock the immune system's full potential to transform diagnostics and therapeutics.

Florian Hauer completed his doctoral research in the group of Holger Stark at the Max Planck Institute for Multidisciplinary Sciences (for Biophysical Chemistry). He graduated from the Molecular Biology Program in August 2009.

In 2012, Florian co-founded labfolder (www.labfolder.com), a free electronic lab notebook service for laboratory research, where he joined as COO. In 2019 labfolder was merged into Labforward (www.labforward.io) which he supported as CPO.

In 2024, Florian officially took on the role of CEO at MyImmune, an AI-powered platform leveraging adaptive immune networks to decode the immune system, transforming biological data into actionable insights that accelerate diagnostics and therapeutic discovery.

Embracing chaos during parenthood and pandemic

My bumpy road to scientific independence

It's early 2020. My husband and I have just been married thrice, once in his home country India , once in San Francisco and once in Germany. I was more than happy doing my postdoc in an amazing lab at UCSF and my husband was about to transfer into an industry position. It was also the very early days of expecting our first child. In a word, life couldn't be better. Then came Monday March 16. I had just finished a call with the nurse in the hospital who told me to come in for abdominal pains she worried could come from a tubal pregnancy when the news reached the lab that all of SF was going into lockdown due to COVID. My life has not been the same after that.

On the next day, I went to the hospital alone, anxiety peaking while I was breathing into my mask, trying to ignore the morning sickness, but luckily found out my baby was happy and healthy. The anxiety never quite left, though. It seems to me it comes with being a parent. Although lockdown was an incredibly isolating experience, it ended up being somewhat of a gift. The tiredness from early pregnancy made me crash out multiple times a day. At the same time I had no time to slack, trying to get my postdoc paper published. Luckily I had finished the wet lab experiments for the revision work the week before and "just" had to finish the last bit of bioinformatics for our single cell paper. In summary, quarantine was everything but boring and rather one of the most productive periods of my postdoc.

But the universe had another card up its sleeve for us. My father got diagnosed with stage 2 colon cancer, black life matters rendered the city shattered and the constant feeling of doom with a whiff of apocalypse was hanging over our heads. In order to transfer into industry my husband had to apply for a new visa. However, just when he was about to start the process Trump suspended the fast track visa application process. Long weeks of discussion followed. My husband had a strong desire to leave academia and considering the pandemic and my pregnancy we finally decided to move back to Germany.

Katja and Vivek during their Indian wedding

After 3 months of trepidation my husband's visa for Germany was finally approved and the airlines had just started operating again allowing us to leave the US shortly before my pregnancy progressed too far to enter a flight. My husband received a job offer from a company in Marburg and my postdoc PI and I had agreed on me doing cross-continental home office. I was also looking for a lab in Marburg which would allow me to do some wet lab work. This is how I came across a job ad on the lab website of Sven Bogdan, who was hiring a Junior Group leader. I applied and, 7 months pregnant and to my absolute surprise, was offered the job.

Becoming a group leader has always been my dream. In fact, it wasn't quite a dream, it was frankly the only thing I could imagine myself doing with my life. Yet, it meant going back to work only three months after giving birth. My naive, still childless brain presumed it would be alright - after all as a postdoc in the US I would not have had more than 12 weeks of parental leave either. A few days of bliss passed before I found out my baby was in breech position. I spent the last few weeks before giving birth doing the "indian bridge" and "moxen" with my midwife.

On 11-11-2020 (yes, I *am* proud of that date!) I finally gave birth to my beautiful daughter, Mira. She filled our life with a joy we could not have imagined before. Suddenly, there was this fragile, beautiful little person that was entirely dependent on me. However, being a scientist never quite leaves you, even when caring for a newborn. I had planned to write a grant application, thinking I will do so while the baby would sleep. It turns out, the picture of a child, calmly sleeping in its crib that is painted by the movies is quite far from reality, at least as much as Mira was concerned. She would not sleep more than 10 minutes after putting her down, so I wrote my grant with her in the carrier while bouncing on a balance ball. When I started my position as a new

Katja Rust completed her doctoral research in the Stem Cell group of Andreas Wodarz in 2016 where she stayed for a short postdoc phase. In 2017, Katja joined the lab of Todd Nystual at the University of California, San Francisco as a research associate. In 2020, Katja returned to Germany as a group leader at the University of Marburg. Katja is married to Vivek Kuma Mishra, a GGNB alumnus. They have two daughters, Mira and Ria.

Embracing chaos during parenthood and pandemic (continued)

group leader, my mother looked after Mira. Getting the lab started moved well and felt just like a natural continuation of what I had been doing before. I was and still am more than happy to be able to pursue my own projects and being able to drive the research direction of the lab felt and still feels incredibly rewarding. I was grateful that research was going well, as my daughter had decided not to accept bottle feeding whatsoever. Interrupting work every few hours to go home and nurse a baby isn't exactly an ideal situation to get a lab started. But this phase passed and the universe, mercifully, gave me a break from crazy things happening. Three years later and another daughter richer, I am more than thankful for everything that happened that left me exactly where I am today. Science is more fun than ever and my kids are two loud, happy and head strong little girls who never let life get boring. Everything that happened in the years of 2020 to '21 taught me that I am capable of surviving anything that life may throw at me. It also taught me that coincidence is a major determinant of life.

Balancing career and kids - an *almost* impossible task

Considering the coincidence that brought me here, what are my two cents on how to navigate career and family? Looking back, I realized that it was not only coincidence that allowed me to be successful as a scientist. Besides an unwavering love for doing research, there were also a number of supportive mentors, who believed in me and, more importantly, made me believe in myself. It was family and friends lifting me up when I was low and helping me out when I needed help. It was my mom taking a 3 month leave from work to take care of my baby to allow me to take a group leader position. And it was and is my husband, who I can rely on to take over his part of the responsibility.

The Rust lab

Being a mother and at the same time working full time comes with a number of challenges that I had not anticipated before having kids. More specifically, being a mother has radicalized me in feminist terms. How come, you might ask? For example, in three and a half years of working with two different childcare facilities it never occurred to a single caretaker to first call my husband over me - even though they


Katja, Vivek and their two daughters

are well acquainted with him. Somehow, it seems that a large portion of the burden - staying home with sick kids, organizing birthdays, taking care of doctor's appointments, household, etc. - is believed to be a mother's duty. While our society is progressing towards accepting that women can have successful careers it is at the same time still women who are expected to do most of the unpaid labor in addition to their paid work. It means, taking on not one, but two full-time jobs as a mother and that is, quite frankly, too much to be successful in either. Being scientists, we also live far from either of our families who could help out, so in the end it is just me and my husband. We needed to learn (and are still optimizing) to share the workload equally among us. While the workload of having a family is still challenging to perform alongside two full time jobs, sharing it 50/50 is doable. Today we are still working on our expectations of ourselves and each other, to reflect on our own behavior and learn to communicate with each other. In the end, a large portion of why I can be successful in science as a woman and mother is because I have a husband who is stepping up and doing his part.

Four years into managing both a lab and a family, I believe that the combination of both roles has made me more successful overall. It made me more structured, organized and has helped me to better my leadership qualities. The lab is productive and the lab and I are excited to start a new project progressing into cancer research. And I will keep challenging myself and my partner to distribute work equally - because my next stop is getting my CV into shape to apply to Professorship positions.

A humble piece of advice

Are you considering a career in academia? And do you plan on having a family? If you have doubts on whether it is possible, I can assure you - it is. If you are asking if it is easy - it really is not. Any career is challenging to reconcile while having kids, but in academia work is never finished. You can always conduct another experiment, write another grant application, read another paper and it will never feel like you did enough at the end of the day. When you are the primary caretaker for small kids on top of that, there is little to no time left to take care of yourself. The bottom line is, pursuing a scientific career is only worth it

Embracing chaos (continued)

if you really, unequivocally love it and cannot see yourself doing anything else. If this is you, you might find yourself in the most privileged position you might imagine. During the day you can do what you love, to come home to the people you love.

While a lot of coincidence plays into success in academia, you can set up your own path for success. The right choice of mentors is without a doubt crucial. You need a PI who sees you, who helps you to network and find your own scientific niche. For me this was both my dissertation adviser, who has believed in my ability to work independently and allowed me to plan my own project, as well as my postdoc PI, who encouraged me to dive into single cell sequencing, a - at that time - brand new technique and who inspired scientific discussions like no other scientist I have met so far. Also - and this might not sound romantic whatsoever - you need a little bit of wisdom when choosing your partner. I am lucky that my husband's working hours are mostly flexible and allow him to pick up the kids while I finish my work day. At the same time equal distribution of childcare responsibilities is something we still try to figure out.

I may have left you wondering if having kids is really worth it. In the end everybody has to answer this question for themselves. For me, the answer is a clear and adamant yes. While my career might go more smoothly if I was childless, I would not swap my girls for anything in the world - not even for an academic career. It is unbelievably hard to be a mother, but receiving a tight hug from the small arms of a barely two year old child who shouts "mamaaaaa" from the top of their lungs every morning and receiving tiny feathers from a four year old with the words "These are so pretty, I wanted YOU to have them!" fill my heart with more love and joy I could ever describe in words.

Navigating academia to industry

Ana

Participating in the GGNB Alumni Mentoring Program was an extremely positive experience. I applied to the program because I was eager to know more about the daily life of a scientist in industry: the responsibilities, challenges, work pace, how the projects are developed, and whether I could fit somewhere in this world. I was looking forward to connecting with someone working in this field who could share their experience and give me some insights regarding the transition from academia to industry.

I was paired with Dr. Sona Barth, who is currently a Senior Research Scientist at Evotec. Sona and I got along well since the beginning. We decided on monthly meetups – always accompanied by good coffee and nice plants, - as we both live in Göttingen and could meet in person.

At the first meeting we agreed on an agenda for the whole duration of the program, outlining specific topics to be covered in each session. The agenda served as a guide for both of us to be prepared for the discussions, but it was also flexible to be adjusted according to how the conversation developed.

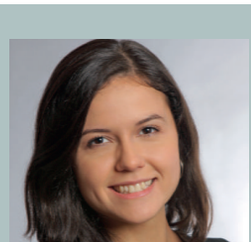
Sona was always very engaged, and I could feel that she truly wanted to help me and to share her experience with me. Even with a busy schedule, she always found time to answer my questions and give me advice, and her kindness and patience made me feel very comfortable to talk openly about my concerns and doubts.

During our meetings we discussed about her trajectory in science, her daily activities in industry, and how she manages the time between work and personal life. She gave me valuable suggestions regarding CV and application processes, and I also had the opportunity to participate in a tour at Evotec, where I could see her work environment more closely.

It was overall an extremely enriching experience, and I am grateful to Sona for all the guidance and to the organizers for finding me such a great mentor, with whom I look forward to keeping in touch.

I feel more informed and confident now to make decisions for my career, and better prepared for what comes next. This program offers a valuable opportunity of learning and growth, and I certainly recommend it to students who wish to be

Ana Carolina Schwarzer is a doctoral researcher in the Department of Molecular Biology (Bohnsack lab) at the University Medical Center Göttingen and will defend her PhD thesis in 2025.



Sona Barth completed her PhD with Jürgen Wienands in the Dept. of Cellular and Molecular Immunology at the University Medical Center Göttingen in 2015. After one year at Juno Therapeutics, Sona joined Evotec, Göttingen, where she worked as Senior Research Scientist. Since February 2025, Sona is a Principal Scientist at Roche, Basel, Switzerland

Navigating academia to industry (continued)

better informed about their career goals and professional development.

Sona
When I was finishing my PhD in 2015, switching to biopharmaceutical industry seemed an appealing career path, but I was unsure how to navigate it. Having limited connections with professionals who had made the same transition, I spent nearly a year job hunting. The first offer I received was for a Quality Control position at a small biotech startup, but I quickly realized that the routine nature of the role didn't align with my scientific interests or long-term professional goals.

Looking back, I recognize how valuable it would have been to have a mentor who could help me understand the wide range of roles available in the pharmaceutical industry, and guide me in making an informed decision. I also lacked clarity about the practical steps needed to transition successfully. How could I enhance my CV to appeal to industry employers? Which skills should I emphasize? What additional courses or qualifications would make me a stronger candidate? These questions were left unanswered, and I often felt isolated in my job search. So, when I was approached by Steffen to mentor Ana, I knew immediately that I wanted to provide the support I had missed.

Ana and I hit it off right from the start. We set up monthly one-to-two-hour meetings to discuss various aspects of the academic-to-industry transition. I was impressed by Ana's thorough preparation for each session. She came with a set of insightful questions and took assignments, like tailoring her CV, very seriously. Her curiosity and enthusiasm were evident, as she often asked follow-up questions that enriched our discussions. As a result, I found the meetings both enjoyable and easy to facilitate - there was little preparation required on my part, as I simply shared my personal experiences and insights.

I thoroughly enjoyed mentoring Ana and found the experience to be mutually rewarding. I am hopeful that our conversations will help her secure a role in life science industry, and I look forward to staying in touch with her.

Engage in networking and explore career options

Why did you join the alumni mentoring program?

Nesil: I was curious about science management and wanted to explore whether it would be a suitable career path for me. After meeting Franziska at one of the Career Impulse Sessions, I became eager to learn more about the field. By joining the mentoring program, I saw an opportunity to work with an experienced mentor who could guide and support me through this process.
Franziska: During my doctoral studies, I spent considerable time contemplating my future career path. I sought guidance by meeting with individuals who were already established in science management. These interactions were invaluable in shaping my own journey. Now, I feel it's my turn to give back. I was eager to support Nesil as she navigates the next steps in her career.

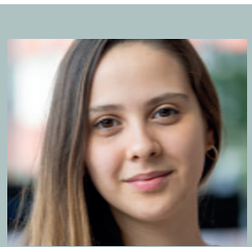
How did you structure your meetings?

Nesil: We clarified the topics at the beginning of our mentorship. Creating an agenda for our meetings in advance was beneficial, allowing us to cover all the planned topics effectively and discuss a range of issues.

Franziska: We met online once a month in the evenings, in a relaxed atmosphere. We were so engaged in our conversations that we didn't even notice how time flew by.

continued on next page

Nesil Esiyok is a final-year doctoral student under the supervision of Rüdiger Behr at the Platform Stem Cell Biology and Regeneration at the German Primate Center.



Franziska Schmidt completed her doctoral research in 2013 under the supervision of Matthias Dobbelstein in the Department of Molecular Oncology. She currently holds the position of Center Manager for the Center for Digital Transformation at the Technical University of Munich's Heilbronn campus.

Engage in networking and explore career options (continued)

How has the mentoring program helped you define your career goals and plan your next steps?

Nesil: The mentoring program allowed me to take the time to reflect on my interests and values, helping me to make an informed decision about my future career. Once I clarified these, I could be more focused on taking the next steps. Additionally, it gave me the opportunity to connect with others who share similar interests.
Franziska: As a scientist, you have a wide range of abilities, but it's crucial to identify your interests and skills to uncover potential career paths. Leveraging online tools like MyIDP from Science Careers can guide you in making informed decisions. It's like a funnel: you start with various possibilities and then narrow down your next steps.

How did you benefit from the mentoring program?

Nesil: Having Franziska as my mentor was an exceptional opportunity. Besides sharing her experience, she also encouraged me to engage in networking and explore a variety of career options within the field. Talking with her and others about science management helped me to understand this career path with all its aspects.
Franziska: I enjoyed learning and enhancing my coaching skills, particularly in providing structured feedback and support. Being paired with Nesil in our mentoring tandem was a great pleasure; her curiosity and respect made our communication excellent, and we even shared many laughs.

What advice would you give to future participants of the mentoring program?

Nesil: My advice for future mentees and mentors is to start by creating an environment of trust and establishing a clear direction for your mentoring journey. Don't hesitate to be open with each other and communicate your expectations from the beginning. The key to a successful mentoring relationship lies in effective communication and mutual respect. Take full advantage of the opportunity to learn from each other and make the most of this enriching experience.
Franziska: For future mentees and mentors, I recommend setting clear goals and expectations from the beginning. Regular communication and feedback are essential for a successful mentoring relationship. Lastly, enjoy the process and make the most of the opportunity to grow both personally and professionally.

Current profession and location of our Molbio PhD alumni

Profession

Academia / Research (47%)
Professor 7%
Group leader, PI 5%
Staff/senior scientist 4%
Postdoc 25%
Science management 6%

Private & Public Sector (41%)
Scientist, team leader, manager R&D 20%
Staff, team leader, manager non-R&D 13%
Science manager/coordinator 2%
Consulting 5%

Other Profession (11%)
Media, publishing 4%
Patent attorney 2%
IT, software development 1%
Self employment 4%

Other (7%)
Other professions, internships, job applications, family management etc. 7%

Country Distribution

Europe (82%)
Austria 1%
Belgium 1%
Germany 62%
Luxembourg 1%
Malta 1%
Netherlands 2%
Norway 1%
Poland 1%
Romania 1%
Spain 1%
Sweden 1%
Switzerland 7%
Turkey 1%
United Kingdom 4%

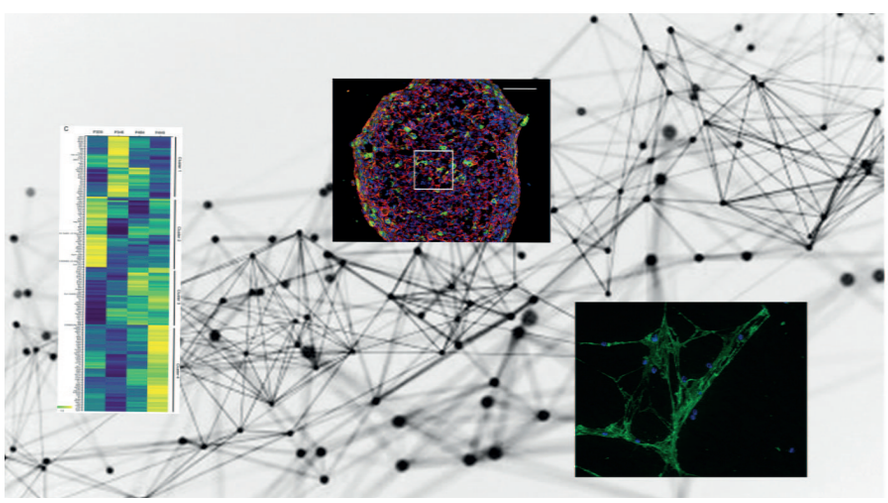
North America (13%)
Canada 2%
United States 11%

Asia / Australia (5%)
Australia 1%
China 1%
India 2%
Iran 1%
Qatar 1%
Saudi Arabia 1%
Singapore 1%

values rounded upwards

Unfolding tumor complexity, one element at a time

Treating a complex disease is always challenged by the multifactorial nature of the disease and the fact that the fundamental building blocks of the disease architecture do not function in solo but are finely intertwined to orchestrate the pathological behaviour. It is therefore imperative to see a need for a comprehensive view of this architecture before embarking on any curative cues. When Einstein was once asked how he would deal with a complex problem if he had an hour to work on it, he said: he would spend 55 minutes dealing with the problem and 5 minutes working on the solution. This is exactly what we embarked on in April 2016, when I started my own research group at the University of Sydney working on a multidimensional complex problem: "Cancer".



The integrated network of cancer complexity. From Left to right: Proteomic analysis depicting clonal variations of chemotherapy response in high grade serous ovarian cancer, Immunohistochemistry staining for E-Cadherin and Vimentin in head and neck squamous cell carcinoma spheroids highlighting different EMT states, Immunohistochemistry staining for collagen1 in decellularized extracellular matrix 3D scaffolds.

Cancer as we all know is a disease stemming from genetic mutations most of which cause the genome to become incapable of maintaining its integrity. The perturbed genomic instability in cancer cells, prepares the grounds for more genetic variations which at some point continue to occur at selective clonal lineages within the tumor, hence creating a landscape where individual groups of cells bear different mutation patterns. This state, known as intratumor heterogeneity, is known to play a key role in differential response and even resistance to treatment as well as cancer relapse and has been the focus of our studies in the last couple of years. With a primary interest in solid tumors and carcinomas, we started our journey exploring levels of cellular heterogeneity in a number of cancers including ovarian and head & neck carcinomas. As we know, carcinomas are the cancers of the epithelial tissue. Once the mutation burden reaches the level to kickstart the carcinogenic process, the epithelial cells undergo epithelial-mesenchymal transition (EMT), which allows them to migrate and be more plastic within the tumor environment. In fact, the cellular plasticity associated with the EMT states has been one of our main interests. Using 3D tumor spheroids and tumor samples derived from head and neck squamous cell carcinoma patients, we figured that majority of the cancer cells maintain a hybrid epithelial-mesenchymal state which is known to be an epigenetically primed state of plasticity. Once the tissue underwent treatment, in our case radiation, the cells found their positions within the stress environment by transitioning along the EMT axis, and assuming more mesenchymal and epigenetically stable states which proved to be more radioresistant and invasive. More work in this domain, in an *in-vitro* mimic of hyperglycaemic stress as experienced in diabetic patients, showed further significance for the EMT state transitions during stress adaptation. It turns out that exposure to higher levels of glucose changes the baseline states of EMT in carcinoma cells and the EMT remodelling in response to radiation, leading to radio-resistance.

So, with all these happening at the cellular level in cancer cells, we decided to expand our field of view to see how cancer cell behavior is affected by various tumor microenvironmental components. For this, the extracellular matrix (ECM) turned out to be a very attractive target. Although initially thought of as an inert structural compartment in the tumor stroma, the ECM is continuously gaining attention for its instructive role in the stroma, facilitating cell-cell and cell-matrix signalling. With an interest in 3D cancer models, in the last couple of years we have embarked on building a more complex model with decellularized native tissue matrices which could be potentially seeded with all individual cell types of the tumor, including the cancer cells. Using the head and neck

GGNB Science Day and SAB site visit

The Scientific Advisory Board (SAB) of the Graduate Center for Neurosciences, Biophysics, and Molecular Biosciences (GGNB) plays a vital role in shaping the center's educational and scientific direction, reporting to the presidential board of the University and the executive management of GGNB. On November 22nd, 2024, the SAB visited the Göttingen Campus as part of the biennial GGNB Science Day, offering a unique chance for PhD students and alumni to connect and explore research across GGNB's 16 programs.

Ahead of the visit, the SAB reviewed a comprehensive report on recent progress and future goals of our graduate center. Key topics included consolidation of program structures, the extension and perspectives of the four International Max Planck Research Schools (IMPRS) affiliated with GGNB, integration of newly established initiatives with external funding, a GAUSS-wide survey on the financial situation of PhD students, adjustments to curricular activities and communication, the GGNB-wide expansion of the Alumni Mentoring Program, and the return to post-pandemic student-led activities. The report also featured statistics on graduations, alumni, and publications.

The SAB visit and GGNB Science Day also provided a platform to promote awareness for dynamic developments, including artificial intelligence, predatory publishing, as well as non-scientific misconduct and abuse of power.

The Science Day, held at the MPI-NAT, began with a warm welcome from GGNB speaker Markus Bohnsack and PhD representatives Michaela Vystrcilová and Tariq Ali. More than 80 students showcased their research in a vibrant poster session, encouraging scientific exchange with peers and SAB members. After lunch and the poster awards, eleven GGNB alumni, including the former Molbios Sona Barth, Carlos Eduardo Lima da Cuha, Simone Mayer, and Dragomir Milovanovic, led round-table career discussions in an engaging speed-dating format. Simultaneously, closed sessions provided space for candid conversations of the SAB members with PhD representatives, faculty, GGNB leadership, and Vice President Brümmer.

A huge THANK YOU to all organizers and participants who made the day a lively, interactive, and resounding success! In its report to the presidential board, the SAB commended GGNB for its "interactive and supportive spirit that continues to foster an environment inspiring innovative science."

Unfolding tumor complexity, one element at a time (continued)

(oral) squamous cell carcinoma as the cancer of choice, we initially built this model with decellularized mouse tongues to mimic the tissue-of-origin ECM for this cancer. It turned out that the cells not only liked the new matrix and integrated well, but the model generated the closest molecular profile to tumor tissues making it a perfect candidate to recreate the complexity of the tumors *in vitro*. Further tests with various decellularized matrices showed a key role for the ECM in defining cancer cells response to treatment and their treatment-induced remodelling capacity. In fact, select ECMs could direct the cells into states with various epigenetic vulnerabilities to therapy, making them differentially responsive to a wide range of treatments.

As a reflection of our past few years in cancer biology attempting to put the pieces of the cancer puzzle together, we know that there is still a long way to go and a lot to learn. One thing is very clear though: we are still walking through the 55 minutes of the cancer problem without which achieving an efficient and lasting treatment will not be possible. The complexity of cancer as a disease is defined at the interface of genomic instability, cellular plasticity and the dynamic remodelling of the tumour microenvironment both during the course of carcinogenesis and treatment. Gaining a comprehensive overview of these events will undoubtedly inform more efficient and reliable treatment strategies and better patient outcomes and should be our ultimate goal.

Naisana Seyedasli
completed her doctoral research in the group of Michael Kessel at the former MPI for Biophysical Chemistry in 2008. In 2009, she joined the Victor Chang Cardiac Research Institute in Sydney, Australia, as a postdoctoral research fellow. Since almost nine years Naisana has been working at the University of Sydney, where she currently holds the position of Senior Lecturer and Lead of Cell Plasticity and Drug Resistance.

Brains, Bars and Bremen

The MolBio Master‘s Retreat 2024

As is the case for all MolBio batches before us and probably after us too, we spend the majority of our summer studying intensely for the Master’s examinations. On the 21st of August, after six grueling weeks, we were finally free. A few hours after the last oral exam, we got the good news: all of us had passed! This news set the right mood for the Master’s retreat that took place the following weekend. Much to the dismay of our somewhat sleep-deprived classmates, we took an early train to Bremen that Friday and arrived at the “Hotel Munte” without much trouble.

After we had all settled into our rooms, the first activity on our agenda was the scientific portion of the retreat. While enjoying a tasty lunch buffet provided by the hotel, we used this time to playfully test the remnants of our exam knowledge and to reminisce about the lectures of the last year. Many thanks to Rhea for your organization in this regard!

Once this portion of the retreat was complete, we explored the hotel’s wellness area. We relaxed in saunas together, rested in hammocks and enjoyed swimming in the pool and showing off our diving skills.

After training both our brains and our muscles, we sat down for a delicious 3-course dinner before heading out to explore the vivid night life of the city. It started with a live concert in the “Haus am Walde”, before we went to the “Viertel”, a lively district of Bremen with many things to do and see. We visited some bars and spent our time chatting, playing foosball and capturing memories in a photobooth together.

After a short walking tour of Bremen at night, we fell into our beds to get ready for the city tour the next day. In the morning, we fueled ourselves with an elaborate breakfast buffet before walking through the “Bürgerpark”, where we encountered the cutest thing possible: a baby alpaca. After much fawning over the alpaca, the tour moved on to the city center.

Our own trusted local, Kaatje, guided us to all the most important sights, from the “Sögestrasse” to the “Roland”, the “Rathaus”, the “Stadtmusikanten” and the “Bremer Dom”. There, we had a short break from walking and listened to a midday organ-concert. Finally, we proceeded through the oldest district of Bremen, the “Schnoor”, where we indulged in some ice cream while getting swept away by the picturesque little homes and alleys.

On our way back to the central station we were able to, quite by accident, also witness Bremen’s spectacular pride parade. This made the perfect ending for an unforgettable trip. While some of us were now too impatient for their holidays and left directly from Bremen to their final destinations, the majority went back to Göttingen together.

We want to thank the IMPRS Molecular Biology Program and especially Kerstin and Steffen for making this memorable trip possible for us!

Hannah Knerich, Kaatje Knüwer

Building our futures one dNTP at a time

Introduction

One of humanity's defining traits is the communication of experiences and information with one another. The propagation of such knowledge from one generation to the next is entrusted, at least in part, to academic institutions, where eager students congregate to build their skillset and theoretical understanding with the help of experts in the respective fields. This transfer of information from one generation to the next also occurs in cells, whose internal activities so often reflect various aspects of human society. The corresponding cellular process, in this case, is DNA replication, which is what we will be using to discuss the Molecular Biology program and our experience as students of the current cohort.

The University of Göttingen and IMPRS – Our Nucleus and Replisome

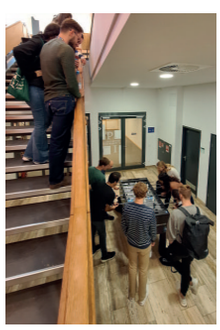
The University of Göttingen is an example of a place where expertise and the required resources for its propagation to the next generation are concentrated, making it a societal equivalent of the cellular nucleus. In our case, all the components involved in the transfer of knowledge comprise the International Max Planck Research School (IMPRS) in Molecular Biology (Molbio), making it the replisome in this analogy.

In September of 2024, the missing final subunit of the polymerase that catalyses the entire process - the new batch of Molbio students - was imported into the nucleus. Following this, our development into future scientists could commence and proceed in the same three stages by which nascent DNA is synthesized during replication: initiation, elongation and termination.

1. Initiation – The assembly of the involved parties

1.1. Horizons symposium

The early weeks of September marked a new beginning for 24 young individuals, many of whom were suddenly faced with a new country, language and way of life. These new circumstances were soon alchemized into a fervent enthusiasm by the 21st Horizons in Molecular Biology Symposium, which was organized by seniors of the Molbio program. Here, a series of talks introduced us to scientific work being done both locally and globally, and in the breaks, introductions were made between students, with foosball games bringing us closer together. For the first time, all the components of the replisome were united.



1.2. Orientation

Before replicative DNA synthesis can begin, the template DNA strand must be made available and primed with RNA that can then be extended by a DNA polymerase. The orientation period from the middle to the end of September served as the helicase and primase that made the program's curriculum available to us by providing the prerequisites for living and studying in Göttingen. Guided tours of Göttingen were organized for both the new Molbio and Neuroscience students in order to acquaint us with the city and its rich academic history. Another highlight from this period was the excursion to the Grenzlandmuseum, which taught the students from both programs about the division of Germany and Europe during the years spanning 1945-1990 by means of 3D models and anecdotes from the knowledgeable guides.

1.3. Journeys to Burg Plesse and Bar Celona

While the importance of getting acquainted with Germany, Göttingen and their history cannot be understated, the orientation period also served the purpose of strengthening the bond between the Molbio and Neuroscience students. One of the first student-organized activities that contributed to this was an afternoon of us exploring the streets of Göttingen, along with the university's botanical gardens and the Bar Celona cafe, where we could bask in the sunlight and enjoy some sweets.

This was of course only the first of many group gatherings that we would have, including a hike to the Plesse Castle, which was completed with a nice meal at the Burgschänke Plesse restaurant and the dazzling view at the top of the castle.

2. Elongation

2.1. Primer extension requires a template and a multi-subunit DNA polymerase

With the participating factors and required foundational elements in place, the template-dependent process of primer exten-

Building our futures one dNTP at a time (continued)

sion into a nascent DNA molecule could finally begin. The template that forms the basis of our development as students is provided by the Molbio coordination office, whose structured curriculum ensures the acquisition and integration of our skills, knowledge, and contributions into the scientific community at the University of Göttingen and the Max Planck Institute for Multidisciplinary Sciences. The catalysis of this template-guided process requires a DNA polymerase composed of multiple subunits, only one of which is contributed by the students themselves. The lecturers, tutors and supervisors are the additional subunits that constitute the fully functional polymerase that mediates the catalysis of our learning using lectures, methods courses and rotations as substrates: our polymerase's dNTP equivalents. The smooth progression of the polymerase along the curriculum is ensured by the program's coordination office: the sliding clamp.

2.2. Relief of torsional stress requires topoisomerases

The passage of this multi-subunit polymerase along the curriculum can give rise to strain. Luckily, monthly culture nights and regular get-togethers keep stress at bay by serving as our topoisomerases.

2.2.1. Culture Nights

The first culture night took place in October and its attendees were primarily creatures of the night in accordance with the Halloween theme. This was followed by a Thanksgiving culture night in November featuring impressively-sized turkeys and baked goods prepared by the organizers and volunteers. Most recently, the Christmas culture night ushered the Christmas spirit into Göttingen with carol singing, gingerbread house decorations, and of course, lots… and lots… of Glühwein!

2.2.2. Movie Nights and the Christmas Markets

The culture nights proved highly effective as stress-relieving topoisomerases, in conjunction with occasional movie nights at basecamp that removed any additional strain arising during the intermediate periods. In December, the Göttingen Christmas Market was a welcome addition to our assortment of recreational destinations, providing an opportunity for us students to come together after our methods courses and reconnect.

The 21st of November was especially memorable for those international students coming from warmer climates, as they got to experience snow for the first time in Göttingen! In fact, Kevin, one of our classmates, even took the opportunity to make his first ever snow angel.

3. Termination

As one cell is undergoing replication, another is bringing the process to an end. This year, the students of the scholastic year 2022-2023 graduated on the 25th of October, marking the completion of their nascent DNA strands. The ceremony featured musical performances and speeches by Molbio students, including a speech given by the newcomers. The invaluable guidance provided by the replisome, that is the Molbio program, has been developing students into young professionals for 24 years and counting, with September 2025 marking the program's 25th anniversary.

This would not have been possible without the dedication of the coordination office. A special thanks goes to Steffen and Kerstin, the sliding clamps that anchor our polymerase and enable its function. May there be many more rounds of replication and propagation of the Molbio experience to future generations!

Ariana Noghreh, Nathan Schembri Rodgers

The master graduation and commencement 2024

Every year in late October, the Molecular Biology (MolBio) community gathers to celebrate a significant milestone—the graduation of the outgoing Master's students who submitted their theses in March and the introduction of the newly arrived students embarking on their academic journey. This year, it was our turn to occupy the honored first row in the Manfred Eigen Hall, receive our diplomas and flowers, and bask in the shared excitement of a day filled with nostalgia, joy, and anticipation.

The Master graduates of the 2022/23 class

More than the ceremony itself, we eagerly awaited the opportunity to reconnect with our former classmates — friends and colleagues with whom we shared countless moments of camaraderie and hard work during our time together. Seeing them again brought back memories of the daily interactions that shaped not only our academic journey but also our personal growth.

Marina Rodnina honoring the the Master graduates

The ceremony commenced with an inspiring speech by Prof. Dr. Marina Rodnina, the IMPRS MolBio program director. With her characteristic wit and warmth, she not only congratulated us on reaching this milestone but also offered valuable advice for the future. She guided us on how to strike the perfect pose while receiving our diplomas, humorously encouraging us to channel the confidence of Nobel laureates. Her words set the tone for an evening that celebrated both individual achievements and collective progress.

Before we received our diplomas, We (Sara and Animan) had the honor of delivering the graduation speech on behalf of our batch. Crafting this speech was an emotional journey that allowed us to reflect deeply on the path we had taken to arrive at this moment. We spoke not only of our individual challenges and triumphs but also of how we evolved as a class. We revisited shared memories — starting with our very first Zoom meeting, which marked the beginning of our journey during uncertain times, to the in-person gatherings, celebrations, and academic milestones that followed.

We used this platform to express our heartfelt gratitude to Steffen and Kerstin, whose unwavering support and meticulous organization ensured the program ran smoothly. More than just addressing logistical needs, they exemplified the inclusivity and fairness that defines this program, ensuring the application process was accessible to everyone regardless of nationality or socioeconomic background, focusing solely on merit. Their dedication significantly shaped our experiences and made our successes possible.

The ceremony continued with the formal handover of diplomas and flowers. A special highlight was the recognition of outstanding performances within our batch. Several of our classmates received well-deserved prizes, including an international cookbook — a fitting tribute to the diverse and multicultural nature of our community. We also cheered for Jonny, who was awarded a voucher for books in honor of his exceptional achievement during the master thesis.

Sara (left) and Animan giving the graduation speech

The master graduation and commencement 2024 (continued)

Following a long-standing tradition, the first part concluded with wonderful musical performances by Saruby Sharma, Tom Prolingheuer and Aybeg Günenç. The second part of the evening was dedicated to welcoming the new cohort of Master's students, a moment that brought back vivid memories of our own first days in this program. Nathan Schembri Rodgers from the new batch, delivered a heartfelt and nostalgic speech, beginning with a line from Peter Pan:

Music by Aybeg, Saruby, and Tim (from left to right)

The Molbio newcomer master class of 2024/25

Nathan's Peter Pan speech

"All this has happened before, and it will all happen again."

This simple yet profound statement reminded us of the cyclical nature of this journey. We were transported back to the first graduation ceremony we attended as newcomers, filled with awe and aspirations. It also prompted us to reflect on how far we had come since then. Surely, in two years, the current newcomers will recall this moment as they celebrate their own milestones.

Following Nathan's speech, each newcomer had the chance to introduce themselves. Although learning the names, backgrounds, and aspirations of 24 individuals in just a few minutes was a challenge, it was a joy to see the diversity and enthusiasm they brought to our community. Their introductions marked the beginning of a new chapter for them and for us, as we looked forward to mentoring and collaborating with these fresh faces in the years to come.

The evening concluded with conversations, laughter, and the mingling of old friends and new colleagues. It was not merely a celebration of achievements but also a reminder of the enduring bonds and shared purpose that define the MolBio community. As we stepped out of the Manfred Eigen Hall that night, holding our diplomas and flowers, we carried with us not only the memories of the past but also the promise of a future shaped by the collective spirit of this remarkable program.

Animan Tripathi, Sara Ahrari

Our Molbio student representatives

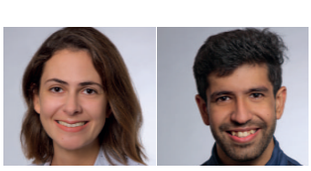
MSc student representatives

Congratulations to our newly elected MSc student representatives **Ariana Noghret** (left) and **Mariia Zelenskaia** (right).

Many thanks to our former MSc student representatives **Hanna Knerich** (left) and **Khushboo Jain** (right).

PhD student representatives

Congratulations to our newly elected PhD student representatives **Spyridoula Sagropulou** (left) and **Sumeru Panta** (right).



Many thanks to our former PhD student representatives **Dimitra Tsouraki** (left) and **Gantavya Arora** (right).

Science, Sightseeing, and Connections

The 2024 PhD Retreat in Weimar

On the morning of June 20th, as the sun just began to rise above the horizon, there was an excitement in the air as everyone had gathered around the Göttingen train station. The waves of laughter and chatter gave a glimpse of what lay ahead -a few days away from the lab benches and laptops, and into a world of science, networking, and exploration. This year, the destination was Weimar, a city that perfectly amalgamated history, charm, and tranquility. Our train departed from the Göttingen station to Weimar at 8:08 AM for three incredible days of engaging talks, meaningful conversations, and cultural adventures, all under the warm glow of summer.

Roaming around the picturesque city of Weimar

Kicking Off with Science

After reaching Kaiserin Augusta Hotel and freshening up with some warm coffee, the retreat began with what we do best — sharing our research. We heard presentations that were as diverse as they were fascinating. Each talk was a blend of curiosity, exciting data, and just the right amount of humor to keep things lively. Questions and ideas flowed naturally, sparking engaging conversations that extended beyond the sessions. Breaks and meals often turned into casual brainstorming moments, filled with enthusiasm and the exchange of ideas. While some immersed themselves in conversations over coffee, others found comfort and solace in playing the piano available at the hotel during these breaks. After an intense day of "sciencing," the day concluded with a delicious dinner at the hotel. After dinner, while some set out to explore the bars in the city whereas others chose to rest their tired legs and recharge for the next day.

Friday brought the much-loved poster session, a chance to showcase research in a more interactive way. The room buzzed with excitement as presenters shared their work, fielding questions, swapping tips, and occasionally hearing a much-needed "Wow, that's awesome!"

These sessions are a MolBio tradition for good reason — they're not just about presenting your own work but about connecting with others. From troubleshooting stubborn experiments to uncovering unexpected similarities in projects, the poster session reminded us how much we learn from each other.

Alumni Talks: Inspiration in Every Story

One of the retreat's highlights was Saturday afternoon's alumni career talks. Five of our wonderful alumni

Poster sessions and alumni speed dating

Science, Sightseeing, and Connections (continued)

— Katja Rust, Kanika Vanshylla, Natalia Korniy, Gerrit Altmeppen, Alexandra-Zoi Andreou — each on their unique path, shared their journeys and the lessons they've learned along the way. From industry to academia and everything in between, their stories were honest, inspiring, and full of wisdom. After the talks, we switched gears to the speed-dating format. Alumni rotated through small groups, and we got to ask our burning questions. Whether it was about navigating career changes, finding work-life balance, or simply surviving the PhD grind, their advice felt like a roadmap for the uncertain (but exciting) paths ahead.

No retreat would be complete without evenings full of laughter and connection. Dinner time was a perfect mix of delicious food and great company, with some alumni joining us for the meal.

Later, groups split up to enjoy Weimar at night before leaving, the next day — some explored local bars and lively squares, while others opted for quiet chats and card games back at the hotel. Whether you were out dancing or cozied up with a drink, the last day of the retreat had something for everyone.

Exploring Weimar: Past and Present

Weimar is a storybook waiting to be explored. For our free Friday afternoon, we had several options to choose from. Some of us wandered through the historic old town on a guided tour, soaking in tales of Goethe, Schiller, and Weimar's golden age. Others chose quiet reflection at the Buchenwald Memorial, an experience that left a profound impact. And of course, there were those who took the "free time" option, discovering cozy cafes, hidden gardens, and corners of the city that felt like they belonged in a painting.

One of the most memorable highlights of our retreat was experiencing the Fête de la Musique, Weimar's annual celebration of Worldwide Music Day. On the evening of June 21st, the old town center came alive with the sounds of music, turning every street corner, square, and café into a stage. We strolled through the lively streets, surrounded by melodies from professional musicians and enthusiastic amateurs alike. Each corner offered something different — soothing classical strings in one square, upbeat jazz in another, and acoustic performances tucked into cozy nooks. The city, with its affluent musical heritage, provided us a chance to savor a slice of its glorious tradition.

Enjoying the city's festival "Fête de la Musique"

Exploring the Buchenwald memorial

Leaving with Full Hearts (and Brains!)

As the retreat wound down, the train back home was filled with a mix of exhaustion and exhilaration. The past three days had been a perfect blend of science, sightseeing, and socializing, leaving us with new ideas, fresh perspectives, and plenty of shared memories.

We returned to our labs not just with insights for our projects, but also with a renewed sense of belonging. The retreat wasn't just a break from the routine; it was a reminder of why we do what we do and the incredible community we're part of.

Spyridoula Sagropoulou, Sumeru Panta

The sun never sets on this Horizon!

Looking back at the 21st Horizons in Molecular Biology

For all us Molbios, September brings with it a hum of anticipation – the early wisps of autumn, the arrival of the new Molbio students, and the eagerly-awaited Horizons in Molecular Biology symposium. Horizons, a scientific tradition right from the nascent stages of the program itself, has grown over the past 20 years to become one of the largest international symposia in Göttingen, bringing together students and scientists from all over the world at the Max Planck Institute for Multidisciplinary Sciences. As in every year, the 21st Horizons welcomed a wonderfully diverse set of speakers from a variety of fields both within the sphere of academia, and far beyond. The symposium hosted an equally diverse set of almost 300 participants from over 15 countries.

Group photo with participants and organizers

Keynote lecture of Iain Cheeseman [all photos for this article have been taken by Irene Boettcher-Gajewski]

The 21st Horizons was kick-started with the much-awaited Career Fair, an exciting combination of talks and workshops designed to expand our horizons of understanding what we could do with a science degree, far beyond just academia and research. The Career fair once again proved to be a great way to start the symposium, as it is filled with the anticipation of discovering new, and often delightfully unconventional, career paths and the stories of the people that carved them out. This year, the Career Fair provided us insights into the life of scientists working in the industry, and those that decided to make the big career switch into the industry – Tim Nierhaus told us about the joys and challenges of being a structural biologist in the industry, while Katherine Wood and Markus Lechner elaborated on how a transition from one career path to another is always more fulfilling than it is scary. We also got to hear from Lilit Nersisyan about her inspiring journey towards establishing establish the Armenian Bioinformatics Institute, and got a chance to dive behind the scenes of scientific editing at Nature with Sara Osman. The engaging discussions continued at the interactive speed-dating sessions, and well into the lunch and coffee breaks. Selected participants also got to attend workshops by Sarah Blackford, who provided sessions of hands-on training in self-presentation and career decisions.

The academic talks were inaugurated with a riveting keynote lecture by Prof. Iain Cheeseman, who left us gaping at the intricacies of cell division, while also gently urging us to never be afraid to ask profound questions. Over the next few days, we were taken on a journey through the myriad fascinating fields of molecular biology research. Starting off from the many secrets of genome organization and repair, Daniel Gerlich and Anjana Badrinarayanan shed light on the elaborate mechanisms of eukaryotic and bacterial DNA repair. Marco Fumasoni, in his talk about genome evolution, broadened our perspective of DNA damage and (imperfect) repair as crucial drivers of evolution. On the topic of gene regulation and its orchestration of developmental processes, Silvia Santos explained the interplay of crucial signals that dictate embryonic development, while Douglas Higgs took us through his groundbreaking work in deciphering the transcriptional program underlying hematopoiesis. In an equally interesting tangent to mammalian development, Neva Caliskan highlighted the dizzying complexities of the regulation of the HIV-1 genome, and what this means for its interaction with a host cell.

We were also taken through the exciting, ever-growing world of ribosomes and protein biogenesis by the leading experts themselves – Nenad Ban, whose beautiful animations of ribosome structures has us enraptured, and Robert Keenan, who walked us through the complexities of membrane protein biogenesis. As testimony to Göttingen being a hub of mitochondrial biology research, among others, we also got to hear from Ricarda Richter-Dennerlein about the assembly of the mitoribosome, and from Anna Wredenberg about the enigmatic yet essential signalling molecules within the mitochondria.

Zooming out to a cellular level, our journey continued through the world of proteins and lipids, and the several mecha-

The sun never sets on this Horizon! (continued)

nisms that ensure their quality control. Maria Federova's talk shed light on the use of lipidomics to study lipidome plasticity and quality control, while Janine Kirstein explained the key role of chaperones in the correct folding of amyloid proteins, and the disastrous consequences of their dysregulation. Continuing on the track of protein transport and sorting, Oleksiy Kovtun took us along the structural features of the endosomal retromer for cargo sorting, and Simon Bullock took us on a trip down the microtubule, in his talk about the motor proteins kinesin and dynein. Olivia Majer, in her talk about immune receptor sorting, reminded us about the immensely delicate interplay of factors essential for a timely immune response.

The next leg of the Horizons journey was through the thrilling paths of molecular neuroscience – Sheeba Vasu detailed the interplay of circadian neuropeptide signaling and temperature sensing, while Gregor Bucher explained the potential of genomic tools to study insect brain evolution and diversification. Dragomir Milovanovic gave us interesting insights into the role of synaptic condensates and their relevance to disease and neuronal signaling. Lastly, in a gripping talk about cutting edge tools developed for neuroscience but now used in labs spanning a variety of fields, Ed Boyden described the power and accessibility of Expansion Microscopy and optogenetics, both pioneered by his lab.

While the academic talks gave us a detailed look into the many wonderful areas of expert research, the daily poster sessions and emerging discussions gave the speakers and participants exciting glimpses into the furthest corners of scientific curiosity. Moreover, this year's student talk awardees (Carmela Cruz, Somenath Dutta, Mojaba Tavakoli, and Magdalena Karpinska) got the opportunity to present their research along with the rest of the speakers. Additionally, three students from abroad are awarded the Horizons travel grant to present their research as a poster. The travel grant awardees at the 21st Horizons were Sanja Nikolic, Bins Chackochan, and Somenath Dutta.

The organizers of Horizons 2024

Poster sessions

Another Horizons tradition is the panel discussion, where a diverse panel of academic and career fair speakers debate and discuss a specific topic with current relevance to science. This year's topic, 'Is the current pressure to publish restricting curiosity-driven research?' saw an engaging discussion involving important insights from the panelists as well as enthusiastic participation from the audience. During each day, scientific discussion flowed as freely as the tea and coffee, as the participants and speakers took to each other and filled the question sessions and break times with lively conversation about the joys of discovery and the challenges of research. The atmosphere in the AI building of the MPI-NAT seemed alive, in a way that is possible only by the confluence of hundreds of perspectives and ideas.

At Horizons, it's never All Work and No Play! The social events brought the speakers, participants, and organizers together in the evenings, to kick back after an intense day of scientific engagement. The attendees of the symposium got to explore the city of Göttingen and grab a beer together. The conference party at the DT Keller saw colleagues and attendees turn into friends, and also proved the lesser-known dancing talents of all these serious scientists by day!

The Horizons in Molecular Biology Symposium is truly a celebration of science, and a testimony to the wonderful ideas, discoveries, and connections that result from the coming together of scientists at different careers and stages. As the preparations for the 25th Horizons are already full-steam, stay tuned for another exciting September that brings with it the first colorful leaves of autumn and the vivid scientific spectrum of the next Horizons in Molecular Biology!

Mandira Choppella

Horizons speakers 2024

Anjana Badrinarayanan, Nenad Ban, Ed Boyden, Gregor Bucher, Simon Bullock, Neva Caliskan, Iain Cheeseman, Maria Fedorova, Marco Fumasoni, Daniel Gerlich, Douglas Higgs, Robert J. Keenan, Janine Kirstein, Oleksiy Kovtun, Olivia Majer, Dragomir Milovanovic, Ricarda Richter-Dennerlein, Silvia Santos, Sheeba Vasu, Anna Wredenberg

New Faculty

Joining the program in 2024

Elisabeth Heßmann

is Professor for Genome Dynamics in Pancreatic Cancer at the University Medical Center Göttingen (UMG). Since 2020, she is Scientific Leader of the DFG-funded Clinical Research Unit KFO 5002. In November 2024, her application for a new DFG-funded Research Training Group RTG 2978 titled "Understanding and Exploiting Adaptation to Therapy in Gastrointestinal Cancer" (joint application with Hannover Medical School), was successful, for which she will be spokesperson.

Elisabeth's group investigates the implications of chromatin-associated mechanisms in the development, progression and therapy resistance of PDAC. As a new faculty member of the Molecular Biology program, Elisabeth contributes to the Master's curriculum with a lecture on precision therapy of cancer. In addition, her group offers lab rotation projects.

https://www.uni-goettingen.de/en/645249.html

Elisa Oberbeckmann

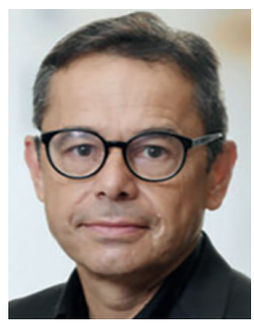
has recently been appointed as Junior Professor at the Department of Molecular Biology, University Medical Center Göttingen (UMG). She remains associated as research group leader with the Max Planck Institute for Multidisciplinary Sciences, Göttingen where she worked as postdoctoral fellow and project group leader from 2020 to 2024. Elisa earned her Dr. rer. nat. degree at the Ludwig-Maximilians-Universität, Munich, Germany.

The current research of her group aims at deciphering the molecular functions and interaction networks of chromatin remodelers, using a complex reconstitution approach in which chromatin is recreated genome-wide with purified proteins. As a new faculty member of the Molecular Biology program, Elisa teaches the introductory lecture on transcription and is also offering lab rotation projects.

https://www.uni-goettingen.de/en/689675.html

Günter Schneider

is Professor for Translational Cancer Research at the University Medical Center Göttingen (UMG) since 2021. From 2001 to 2021 he was independent research group leader at TU München, where he served as Co-Speaker of the DFG CRC 1321 since 2018.



His research group focuses on fundamental changes in gastrointestinal tumors, in particular the molecular basis of pancreatic cancer. Currently they work primarily at the level of tumor maintenance to develop new precise therapeutic intervention options and stratification concepts for personalized medicine. As a new faculty member of the Molecular Biology program, Günter contributes to the Master's curriculum with a lecture on oncogenic signaling and targeted therapies. In addition, his group offers lab rotation projects.

https://www.uni-goettingen.de/en/651420.html

Ramona Schulz-Heddergott

did her PhD at the Department of Neuroanatomy, UMG, before she joined the Sir William Dunn School of Pathology, University of Oxford, as postdoc. Upon her return to Göttingen, Ramona joined the Department of Molecular Oncology, UMG as a postdoc, since 2013 as research fellow, since 2018 as group leader, since 2023 funded by the DFG Heisenberg Program.

Ramona's research focuses on the stress-associated chaperones and its suitability as actionable therapeutic target in gastrointestinal cancers. Furthermore, her group studies tumor suppressor functions of p53 and the tumor-driving consequences of its mutated variants. Murine cancer models as well as patient-derived and murine organoid cultures are used to clarify tumor dynamics.

In the Molecular Biology program, Ramona teaches the lecture on DNA replication and offers lab rotation projects.

https://www.uni-goettingen.de/en/672111.html

Current Molbio faculty members

University of Göttingen and UMG

Biology
Gerhard Braus, Molecular Microbiology and Genetics
Gregor Bucher, Evolutionary Developmental Genetics
Rolf Daniel, Genomics and Applied Microbiology
Jan de Vries, Applied Bioinformatics
Ivo Feußner, Plant Biochemistry
Kai Heimel, Microbial Cell Biology
Heike Krebber, Molecular Genetics
Stefanie Pöggeler, Genetics of Eukaryotic Organisms
Jörg Stülke, General Microbiology
Kai Tittmann, Molecular Enzymology
Ernst Wimmer, Developmental Biology

Medicine
Mathias Bähr, Neurology
Holger Bastians, Molecular Oncology
Tim Beißbarth, Statistical Bioinformatics
Markus Bohnsack, Molecular Biology
Matthias Dobbelstein, Molecular Oncology
André Fischer, Epigenetics and Systems Medicine
Heidi Hahn, Molecular Developmental Genetics
Elisabeth Heßmann, Genome Dynamics in Pancratic Cancer
Hauke Hillen, Protein Biochemistry
Stefan Jakobs, Mitochondrial Structure and Dynamics
Carsten Lüder, Medical Microbiology & Infection Immunology
Tobias Moser, Auditory Neuroscience
Elisa Oberbeckmann, Molecular Biology
Argyris Papantonis, Translational Epigenetics
Peter Rehling, Cellular Biochemistry
Ricarda Richter-Dennerlein, Cellular Biochemistry
Silvio Rizzoli, Neuro- and Sensory Physiology
Günter Schneider, Translational Cancer Research
Ramona Schulz-Heddergott, Molecular Oncology
Henning Urlaub, Bioanalytical Mass Spectrometry
Jürgen Wienands, Cellular and Molecular Immunology

Physics
Jörg Enderlein, Biophysics
Dieter Klopfenstein, Biophysics

Agricultural Sciences
Bertram Brenig, Molecular Biology of Livestock

MPI-NAT

Fassberg Campus
Patrick Cramer, Molecular Biology
Alexis Faesen, Signal Dynamics
Dirk Görlich, Cellular Logistics
Christian Griesinger, NMR-based Structural Biology
Stefan Hell, NanoBiophotonics
Hauke Hillen, Protein Biochemistry
Stefan Jakobs, Mitochondrial Structure and Dynamics
Peter Lénárt, Live-cell Imaging
Juliane Liepe, Quantitative and Systems Biology
Sonja Lorenz, Ubiquitin Signaling Specifity
Marieke Oudelaar, Genome Organization & Regulation
Jochen Rink, Tissue Dynamics and Regeneration
Marina Rodnina, Physical Biochemistry
Melina Schuh, Meiosis
Johannes Söding, Quantitative & Computational Biology
Holger Stark, Structural Dynamics
Alexander Stein, Membrane Protein Biochemistry
Henning Urlaub, Bioanalytical Mass Spectrometry

City Campus
Nils Brose, Molecular Neurobiology
Oleksiy Kovtun, Membrane Trafficking
Klaus-Armin Nave, Neurogenetics

German Primate Center (DPZ)

Rüdiger Behr, Degenerative Diseases
Michael Heide, Brain Development & Evolution
Stefan Pöhlmann, Infection Biology
Lutz Walter, Primate Genetics

Honoring Reinhard's legacy

For more than two decades, Reinhard Jahn has been a a cornerstone of excellence and a driving force behind the success of our International Max Planck Research School (IMPRS) for Molecular Biology. As one of its visionary founding fathers and a dedicated spokesperson until 2012, Reinhard played a pivotal role in shaping our graduate program with unwavering commitment, passion, and foresight. His profound experience with graduate schools, particularly from his time at Yale University, proved invaluable in pioneering key reforms—including the introduction of laboratory rotations and implementing joint doctoral supervision through Thesis Advisory Committees. His tireless efforts and strategic leadership fostered a culture of trust, collaboration, and academic excellence, bringing the University of Göttingen and the Max Planck Institutes closer together and establishing highly efficient joint structures on the Göttingen Campus.

As the coordinator of the Molbio program, I had the privilege and pleasure of working closely with Reinhard, especially during the program's formative years. More than just an exceptional and reliable colleague, Reinhard became a dear friend. Our teamwork was particularly evident in numerous initiatives, especially in securing vital funding and navigating crucial evaluations, including the successful conception of the Göttingen Graduate School (now Graduate Center) for Neuroscience, Biophysics, and Molecular Biosciences (GGNB) under the German Excellence Initiative in 2007/08 and its continuation six years later. Reinhard's remarkable ability to inspire and lead was central to these achievements.

Reinhard's extraordinary dedication to graduate education has been widely recognized. In 2010, he received the Lower Saxony Science Prize for his outstanding contributions to doctoral training. His influence extends far beyond Göttingen, leaving a profound impact on the entire Max Planck Society, where the structured doctoral training model carries his signature. The Göttingen IMPRS programs in Molecular Biology and Neurosciences served as best-practice examples and became exemplary models of excellence. In 2012, Reinhard was appointed Head of the Support of Junior Scientists Presidential Committee to ensure that the Max Planck Society remained internationally competitive in training the next generation of scientists. His remarkable efforts were further honored with the Communitas Award of the Max Planck Society in 2016 and the University Medal Aureus Gottingensis from the University of Göttingen in 2019, reflecting his unwavering dedication and transformative contributions to the scientific community.

Despite his profound love for science, Reinhard always placed the well-being of students and young researchers at the heart of his efforts. His commitment to fostering a supportive and inspiring academic environment was exemplified when he selflessly took on the role of President of the University of Göttingen during a challenging period from 2019 to 2020, demonstrating his exceptional leadership and sense of duty. His impact on the Molbio program remained profound until the very end of his tenure, with his last Molbio PhD student, Jennifer Struck, successfully defending her thesis in October 2024. In December 2024, Reinhard closed his Laboratory for Neurobiology, marking the conclusion of nearly three decades of groundbreaking research, mentorship, and scientific innovation.

Reinhard Jahn's contributions to our program, to young scientists, and to the global scientific community are immeasurable. His visionary leadership, unparalleled mentorship, and steadfast commitment have left an indelible mark on all of us. On behalf of all past and present members of our IMPRS, we deepest gratitude, admiration, and heartfelt thanks for his extraordinary service and lasting legacy. We wish him all the best in his future endeavors, knowing that his influence and inspiration will continue to shape generations of scientists to come.

Steffen Burkhardt

IMPRINT

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