

JANUARY 2024

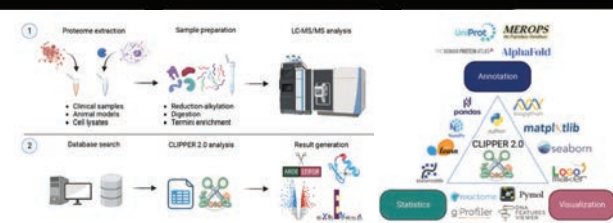
SPECIAL ISSUE in memorium of *Ulrich auf dem Keller* 1974-2023



Edited by:
Laura Edgington-Mitchell

INTERNATIONAL PROTEOLYSIS SOCIETY

QUICKCUTS



THE PREMIER RESOURCE
FOR ALL YOUR IMPORTANT PROTEASE NEWS

A Message from the President:

Dear IPS community, dear friends,

As we now welcome the new year 2024, I wish all IPS members and protease friends the very best for this year. May it be a year of exciting science and fruitful collaborations, but also a year of peace and health.

It is impossible to summarise the year 2023 in one word. We were lucky that we held the first post-corona IPS meeting. In Singapore we could interact off-screen, exchange ideas, and listen to inspiring science. It was also a great opportunity to catch up with "old" friends and make new ones. We also continued with the webinar series and heard an exciting talk which was held by Vishva Dixit on the Many Roads to Inflammation, and hosted by Marcin Drag. Thank you! If you missed it, you still have a chance to catch up, the recording is available on the IPS website. The next webinar in 2024 will be given by Irit Sagi, so be sure to register.

Additionally, we are in the final stages of renovating the IPS website, with great thanks to Olivier Julien, Henry Wang, and Jeanne Hardy. We are now turning to you for your contributions to complete this project. We are looking for a new banner image to represent and portray our society. The winning image will be incorporated into the website

IPS COUNCIL

COUNCIL MEMBERS - EUROPE/AFRICA

Ruth Geiss-Friedlander - President

Catherine Moali - Secretary

Marcin Drag - Webinar Organiser

Daniel Sojka - QuickCuts Editor

COUNCIL MEMBERS - ASIA/AUSTRALIA

Laura Edgington-Mitchell - Vice President

Eiichi Nishi - Treasurer

Kyoko Shirakabe - QuickCuts Editor

Mark Gorrell - QuickCuts Editor

COUNCIL MEMBERS - THE AMERICAS

Jeanne Hardy - Webmaster

Antoine Dufour - Social Media Chair

Henry Maun - Industry Liaison

Ana Paula Lima - IPS2025 Chair

Ex Officio

Anthony O'Donoghue - Past IPS President

Olivier Julien - Webmaster

Message from the President, cont.

home page and the winner will be recognized at the 2025 IPS meeting. If you have images to suggest, please visit the website: protease.org.

2023 was also a year in which we lost dear IPS members, Michael James, Margarete Heck, and Ulrich auf dem Keller. At the end of the year, we also received the sad news that Bonnie Sloane has passed away. Bonnie was the co-founder and first president of the IPS. She was a brilliant scientist who not only envisioned the idea of the IPS but was also a motor that helped to make it happen. Her kindness and her supportive and insightful attitude made her an anchor of our society. I extend my condolences to her family, collaborators, and friends. An obituary in her honor will be added to the next IPS QuickCuts edition. **We welcome you to share your thoughts and memories to honour our first IPS president** (please send your contributions to laura.edgingtonmitchell@unimelb.edu.au). Dear Bonnie, thank you for all you have done. We will miss you greatly.

This special issue of QuickCuts was planned as a dedication to Ulrich auf dem Keller, whose passing has taken us all by surprise. I myself am out of words. I never imagined that I would find myself in a position in which I was faced with writing about Ulrich's memory in the year 2023. Our society has lost a great scientist, a visionary, and a leader. I also lost a dear friend, and it is difficult to accept and comprehend. Since Ulrich initiated the IPS Young Investigator award, we have decided to rename it as the Ulrich auf dem Keller Award in his honor. I thank the many of you who have reached out with your memories and condolences. We have collected your voices in this newsletter. I also extend my wholehearted thanks to Laura Edgington-Mitchell who has edited this special edition. This newsletter mirrors Ulrich as we saw him, and the great void that he has left behind. Together, your contributions show that we are a strong community – it is up to us to make sure that the IPS continues to be a strong society.

Best wishes

Ruth Geiss-Friedlander



Follow IPS on Twitter @IntProtSoc

For rapid dissemination of your protease news:

Contact **Antoine Dufour** (antoine.dufour@ucalgary.ca)

For **QuickCuts** submissions:

Contact **Laura Edgington-Mitchell**

(laura.edgingtonmitchell@unimelb.edu.au)

Visit our newly renovated IPS Website: protease.org

Save the date for our 4th IPS Webinar

Irit Sagi, PhD

**Vice President of Innovation and Technology Transfer
Weizmann Institute of Science**



Prof. Sagi develops and applies unique, multidisciplinary, and biophysical approaches to investigate the molecular processes of tissue and extracellular remodeling. Merging realtime spectroscopic and molecular imaging approaches, she was the first to reveal the complex dynamic molecular nature of extracellular remodeling enzymes, including matrix metalloproteinases and lysyl oxidases (MMPs and LOX). These are a group of human enzymes linked to developmental biology, cancer, inflammation, fibrosis, and infectious diseases. Insights derived from these studies led her to design a new class of inhibitory antibodies that thwart the enzymes' negative action. These prototype antibodies and biological inhibitors are currently being developed for clinical use for human inflammatory and cancer diseases. Prof. Sagi continues to focus her research efforts on novel integrated experimental tools tailored to decipher the extracellular matrix molecular remodeling code and molecular landscapes in healthy and diseased tissues. Specifically, she is using her biological inhibitors as molecular probes together with various omics to unravel new cellular and molecular pathways at the single-cell as well as at tissue levels. Recently, she demonstrated a novel use for proteases in promoting and increasing the rate of embryo implantation in mammals. This discovery led to her establishment of a company, NanoCell, which is developing this technology in livestock and humans.

Recent accolades:

- Juludan Prize for outstanding research projects in 2013
- Landau Prize of Mifal Hapais for Biochemistry in 2017
- Israel Chemical Society ADAMA prize in 2021
- Fonorary doctorate from the Faculty of Chemistry at the University of Patras in Greece in 2022
- Featured on Forbes' #powerwomen 2023 list
- Incumbent of the Maurizio Pontecorvo Professorial Chair

Please save the date for Irit's webinar entitled 'Exploring "ECM remodeling memory" as a mechanism for damage accumulation in acute and chronic inflammatory diseases'

Thursday 8th February 2024

9:30 am IST (Tel Aviv)

8:30 am CET (Wroclaw, Freiburg)

7:30 am GMT (London)

16:30 pm AEST (Melbourne)

23:30 pm PST (California)

**Register for this virtual event
[here](#) or at [IPS.org](#)**

Ulrich auf dem Keller - Obituary

With great sadness, we received the sudden, incomprehensible and saddening announcement of the passing of Professor Dr. Ulrich auf dem Keller in Copenhagen this August. Ulrich's untimely death came as a shock to his family, friends, and colleagues, and we will all miss him beyond words. We accompanied Ulrich through the different stages of his life and career as a mentee, collaborator, colleague, teacher, and mentor – but most importantly as a friend.

Ulrich was a world leader in the fields of wound healing and proteinase biology and a pioneer in mass spectrometry-based proteomics technologies. He has published over 100 highly cited papers on the discovery of matrix metalloproteinase (MMP) substrates and global analysis of proteolysis in healing skin wounds. From 2017, Ulrich was a board member of the European Tissue Repair Society (ETRS), a supporting society of Wound Repair and Regeneration that he served as editorial board member. From 2019-2022, he elegantly and efficiently maneuvered the ETRS through the most difficult period of the COVID-19 pandemic as the president of the society. He was also a member of the SKINTEGRITY.CH research consortium, which he supported through multiple collaborations and contributions to scientific events, and served as the president of the International Proteolysis Society from 2017-2019. His sudden death prematurely stopped his remarkable career on a steep upward trajectory, and we can only imagine what he would have achieved in the upcoming years. Ulrich auf dem Keller's research work will continue to inspire scientists to study wound healing, protease biology, and proteomics for generations to come.

Ulrich was raised in Mülheim an der Ruhr, Germany. He spoke Latin and ancient Greek. Following his passion for science, he studied Biochemistry in Tübingen, Germany, and received his Diploma in Biochemistry in 2000. During that period, he spent one year at the Max-Planck-Institute of Biochemistry in Martinsried outside Munich to perform internships in several labs, including the lab of Sabine Werner. Their first encounter was the beginning of a long-term friendship and collaboration. Ulrich subsequently performed his Ph.D. studies in Sabine's lab, which by then had moved to the Swiss Federal Institute of Technology (ETH) Zurich, Switzerland. As a Ph.D. student, he discovered a key function of the cytoprotective transcription factor NRF2 in the prevention of skin carcinogenesis and additionally studied the role of NRF2 in wound healing. Ulrich received his Ph.D. in 2005.

During his Ph.D., Ulrich developed an enthusiasm for quantitative systems biology when analyzing the NRF2 transcriptome in keratinocytes. To follow this new passion, he decided to join the laboratory of Christopher Overall in Vancouver, Canada, in 2006 where he learned innovative proteomics technologies and combined them with biomedically relevant questions. In the Overall lab, as the recipient of a research fellowship from the German Research Foundation (DFG), Ulrich studied the role of proteases in cancer and co-developed iTRAQ-TAILS, a proteomics technology that allows the identification of neo-N-termini of proteins, and he used TAILS to address many important biological questions. After his return to the ETH in Zurich in 2009, Ulrich established an independent research group, now combining his expertise in wound healing research and proteomics, to identify MMP cleavage events during tissue repair in mice and humans.

In 2017, Ulrich was recruited by the Technical University of Denmark (DTU) Bioengineering in Lyngby. Supported by a Young Investigator Award from the Novo Nordisk Foundation, he established his research program on proteolytic networks in skin homeostasis, inflammation, and repair with a focus on MMPs. At the DTU, Ulrich quickly became a highly appreciated leader, first with his appointment to Associate and then to Full Professor and head of the Section for Protein Science and Biotherapeutics, Bioengineering, Department of Biotechnology and Biomedicine. The obituary released by his university perfectly summarizes his personal approach to science and leadership: "[...] with his visionary and yet modest approach to leadership he has set an example for us all. In countless situations he has put his colleagues' needs before his own, and through his kindness, always managed to bring out the best in people. Ulrich had an ability to identify exceptional talent regardless of their career stage, when recruiting highly skilled scientists as Ph.D. students, postdocs, and group leaders."

With his charisma, Ulrich was a source of contagious inspiration and positive energy to his colleagues and mentees. For six continuous years, he was responsible for impressive growth in his section and recruited numerous talented group leaders all sharing the desire to be mentored by him. The career trajectories of his trainees are, first and foremost, proof that his students and postdocs enormously benefitted from Ulrich's skills and his excellent mentorship. Through his friendly, modest, and positive personality, he was liked by everybody, and he became a role model for many young investigators to whom he demonstrated that scientific success can be combined with family life and hobbies. This included his passion for classical music; Ulrich was an outstanding viola player who played in different orchestras and music groups. In Vancouver, on arrival for his postdoctoral experience, he instantly was made 1st Viola in the Vancouver Symphony Orchestra. Scandinavians also got to enjoy the tones of his viola. His virtuous performances in the orchestra were matched, if not topped, by his presentations as a gifted speaker at leading conferences in his field. Ulrich was an outstanding presenter who most actively contributed not only to the official discussions but also to networking events and trainee discussion forums.

In addition to his leadership and teaching roles, Ulrich's research group and program within Protease Systems Biology at DTU provided exciting insight into the temporal and spatial regulation of proteases in tissue repair and identified novel regulators of the healing process. His contributions were pivotal in understanding the skin protease network, where he focused on MMPs and kallikreins. He was also leading the international research in understanding the interplay between posttranslational modifications and protease activity in the extracellular space, with hallmark works on glycosylation and phosphorylation. Complementing his interest in basic mechanistic questions, Ulrich became increasingly fascinated by the complex problem of non-healing wounds. He extended his research to translational studies, which he performed in extremely productive and joyful collaborations with Hans Smola and Magnus S. Ågren. Ulrich's generous contributions to collaborations with us and others on a wide variety of different research topics resulted in publications that would not have been possible without his skills, knowledge, and ideas. His most recent work identified innovative and promising biomarkers for normally healing versus non-healing human wounds, paving the way for the development of new treatments to restore the healing of chronic wounds. In his pledge to apply for membership on the ETRS board in 2017, he stated, "By becoming a member of the ETRS board, I want to give something back to the society and help in maintaining and further expanding this outstanding network of researchers dedicated to tackle a major unmet medical need with devastating impact on the quality of life of an increasing number of people." And he did.

We have all been extremely privileged and fortunate to interact with Ulrich both professionally and in our private lives. It is impossible to fill the void he leaves, and we cannot begin to grasp his loss for his family. Most importantly, Ulrich was a devoted husband, father of two children, Florian and Julia, brother and son, and our thoughts go out to his family in this period of grief.

Magnus S. Ågren
Boris Hinz
Konstantinos Kalogeropoulos
Christopher M. Overall
Hans Smola
Sabine Werner

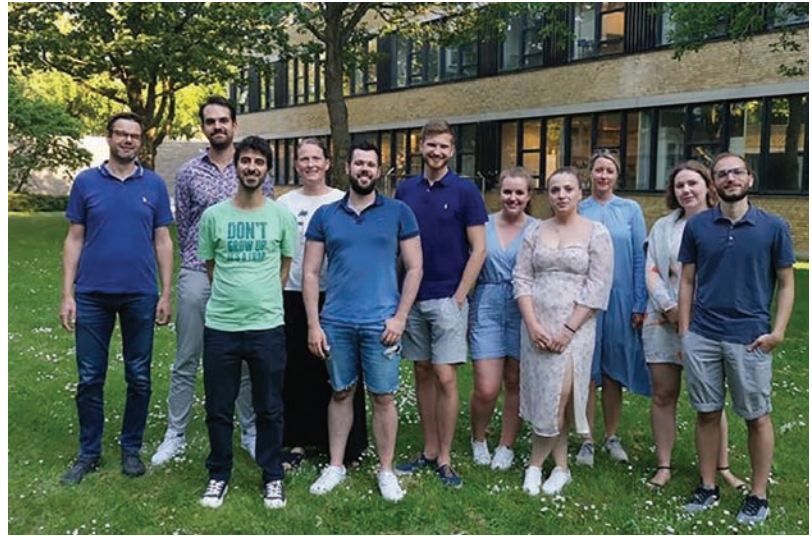
Published in the Wiley journal Wound Repair and Regeneration

<https://doi.org/10.1111/wrr.13118>

Contribution from Ulrich's Lab

Few figures have as profound an impact on the life of an academic or research-oriented professional as a PhD or postdoc mentor. You work closely with them for years, absorbing their ideas and research vision, maturing as you follow their advice and principles to shape your own character and identity. During this crucial period, a strong bond forms between mentor and mentee, often lasting well into both their careers. Even when the relationship becomes distant or less active, the sense of security it provides remains. Good managers and leaders are undeniably rare.

Professor Ulrich auf dem Keller embodied the essence of such a mentor. The news of his passing has left those of us who studied or worked with him, at DTU or previously at ETH, with a profound void in our hearts, and a sense of injustice for his untimely departure. Tragedy often strikes unexpectedly, making it difficult to process such events in a timely manner. As Ulrich travelled between his home in Switzerland and his work at DTU, it became routine for him to be away from the lab for extended periods. Many of us still expect him to burst through the door and engage us in his casually rapid and optimistic manner.



Ulrich was a charismatic leader, always prioritizing the interests of his employees, colleagues, and trainees. He found joy in nurturing and molding young minds, evolving over the years into an exceptional mentor. He took immense pride in his mentees' achievements in academic works, presentations, and various events. His excitement and energy while discussing scientific ideas were infectious. Ulrich genuinely cared about the people around him, ensuring he acknowledged and celebrated their accomplishments, always making sure they received the credit they deserved. He never shied away from tackling challenges, no matter how difficult, inconvenient, or time-consuming they might be. Importantly, he fostered an environment where people could thrive, allowing them the academic freedom to pursue their ideas and interests at their own pace.

Ulrich took great pleasure in being part of scientific and other communities, always striving to give back as much as possible. He held positions such as president of IPS and other societies within his research field, adeptly





navigating difficult times and propelling them forward during prosperous ones. He relished the power that came with such positions, using it for the greater good, always aware of the weight and responsibilities that accompanied those roles.

Beyond being an outstanding mentor, Ulrich was a brilliant scientist and researcher, contributing to novel discoveries, technologies, and tools for the scientific community. His mind was exceptionally sharp and discerning, conceiving elegant and well-thought-out ideas. Ulrich excelled in designing and discussing experiments and theories, showcasing innovation in various fields, from skin cancer to degradomics. He demanded excellence in the work that was disseminated, a reflection of his sense of perfectionism, evident in the high-quality contributions throughout his career.

Professor auf dem Keller's remarkable body of work was a testament to his productivity, dedication, and exceptional intellect. He epitomized the scientific spirit through his meticulous use of the scientific method, dedication to academic integrity, and broad collaborations, sharing knowledge throughout his career. His positive spirit, practical and pragmatic attitude, both in the lab and regarding personal matters, will forever resonate with us. Ulrich's passing has left a lasting scar

that will never fully heal. We miss him deeply, and the impact of his loss is only just beginning to sink in. Ulrich played an instrumental role in shaping our scientific thinking, our careers, and our personal lives. We will always proudly acknowledge that we had the privilege of being mentored by Professor Ulrich auf dem Keller, cherishing the memories of our time with him in the lab, at conferences, and other occasions. We are committed to preserving his legacy, striving for excellence and disseminating his ideas to the best of our abilities. We are certain that many of his peers and collaborators will do the same, and that Ulrich's memory will endure not only through his family and his scientific works, but also through his ideas and the everlasting impact he had to colleagues and trainees.

The adKeller lab



Contribution from Ulrich's fellow post-docs in the Overall Lab

We are joining the IPS community in mourning the loss of Prof. Dr. Ulrich auf dem Keller (1973 - 2023). His loss leaves a gap that extends vastly beyond protease science: Ulrich was a visionary, world-leading scientist pushing the boundaries of knowledge at the crossroads of N-terminomics, proteomics, protease systems biology, inflammatory diseases and wound healing. This extensive list alone speaks to his scientific excellence and creativity. Ulrich was a very productive scientist with more than 75 PubMed-listed publications, including many highly-cited publications as first or senior author. Ulrich was also a fantastic and inspiring presenter – his contributions often stood out during conferences. More importantly, Ulrich will be remembered for his open, friendly, and collaborative approach to science. He enjoyed collaborating and integrating his scientific pursuit into a wider context.



We all got to know Ulrich at different times during his postdoctoral training in the laboratory of Prof. Christopher Overall at the University of British Columbia in Vancouver, BC, Canada. Since his arrival with his wife Caren, a baby and 2 large violin/viola carrying cases at Vancouver airport, Ulrich played a big role in helping others to feel welcomed, settle in, and be off to a good start.

In the Overall laboratory, Ulrich contributed to the development of innovative N-termini enrichment methods such as iTRAQ-TAILS and pioneered their applications in many collaborative projects. Ulrich was also among the first to recognize and successfully tackle the need for bioinformatic integration and processing of the newly developed N-terminomic datasets. At the time, the identification of proteins based on single peptides was rarely accepted - yet this is one of the core requirements to derive biological insights from N-terminomics datasets. Ulrich systematically approached this problem by integrating peptide-level evidence from multiple search engines, charge states and peptides arising from differential digests. To do so, Ulrich was the first to convert the only computing pipeline that supported TAILS data analysis (the TPP), at the time, to the Mac environment which allowed us to use a stable analysis system even on the lab's preferred laptops. He also spent countless hours, in person and online, explaining and supporting users who wanted to use it (including us). We fondly remember countless discussions of his ideas, challenges that he (or we) encountered, potential solutions and the many exciting opportunities that the new methods afforded, often over a cup of coffee in the "Cafe Perugia" in the UBC Life Sciences Centre (where the Overall laboratory is still located). Although only one of many testimonials of his scientific talent, it nicely illustrates Ulrich's visionary approach to science: The resulting CLIPPER software tool was innovative and forward-looking, it tackled a real-world problem, it integrated different scientific disciplines – and was happily shared with the scientific community.

Ulrich's vision for "next-gen protease science" (and beyond) continued to characterize his subsequent career. He successfully started an independent research group at ETH Zurich (Switzerland) and was soon internationally recognized as a knowledgeable leader in protease systems biology and proteomics. He continued to make key contributions to unraveling the convoluted systems driving protease biology and made complex relationships accessible to many. It came as no surprise that he was awarded a very prestigious grant from the Novo Nordisk Foundation, together with his appointment to the Technical University of Denmark (DTU) in 2017. At DTU, he quickly became Full Professor and head of the Section for Protein Science and Biotherapeutics in the Department of Biotechnology and Biomedicine, which he developed into a very successful research unit of great international visibility.

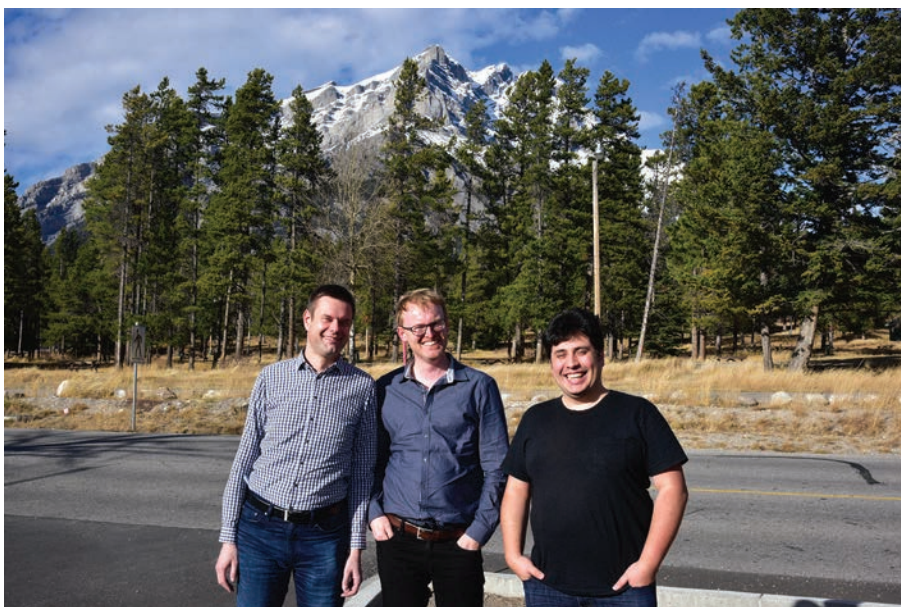
Throughout his career, Ulrich was a role model for many scientists, both young and established. He was very approachable, remained modest, and contributed immensely to the scientific community, e.g. by organizing IPS degradomics training sessions and serving in the IPS as well as other scientific societies. He happily exchanged ideas, as any attendee of the IPS conferences, the annual Tiers Winter School on Proteases and their Inhibitors, and many other scientific meetings will know. We and our students were always very inspired by his input when we had the chance to discuss our science with him.

In addition to being the role model of a skillful academic teacher and researcher, Ulrich was a passionate musician and most of all a dedicated husband and proud father who made tremendous efforts to square the often-contradictory demands of science and family. He certainly managed well (and probably better than many of us). Our thoughts and deepest sympathies are with his wife and children.

It has been a privilege to share a few steps along Ulrich's scientific journey. We will continue to be inspired by his work and honor his memory.



Oliver Schilling
Oded Kleifeld
Pitter Huesgen
Philipp Lange



Ulrich at IPS 2017 in Banff



Ulrich at IPS 2019 in Prague

Ulrich was President of the IPS from 2017-2019. He used this role to champion for young scientists and initiated the IPS Young Investigator Award. Lucia Chávez Gutiérrez (pictured right) was the inaugural recipient of this award at the Prague meeting in 2019. Amy Weeks (pictured below right) received the second award in 2023. In honour of Ulrich's significant contributions to the IPS, this award will from here on be named the **"Ulrich auf dem Keller Young Investigator Award"**.



Ulrich at IPS 2023 in Singapore



Contributions from the Protease Community

Time has passed since this terrible day of August 2023 and I am still not sure if I should remember Ulrich as a dear friend or as a colleague. Most of us probably have the same feeling because he was so kind to everyone, so much willing to help that we all had the impression of being very unique and important to him.

I never officially collaborated with Ulrich but he helped me in so many ways that it will not be possible to list them all. We had similar topics of research as we were both working on metalloproteases in the context of wound healing. We met not only at meetings of the protease community but also of the matrix biology and tissue repair societies. I will never forget when, in 2019, we discovered that we were both trying to identify the protease involved in the release of endotrophin from collagen VI. My group was a bit faster and I remember him saying "I was so happy when I realized it was you who scooped us!" Who else could have said something like that?

He also gave me much advice on how to run TAILS and analyse proteomic data. Back in 2010, I was one of the first external users of CLIPPER and he made some changes to the script for us. He came to Lyon once for a seminar and he was so passionate in discussing with people that we missed the opportunity to have lunch in my husband's restaurant. In Singapore last summer, we discussed that I could test the new version of CLIPPER that he was developing with Kostas. We also discussed PRM to measure biomarkers in skin wounds, HTRA1 in fibroblasts and many other things... I also remember that he pushed me to be a member of the IPS council, something I would have never considered without his encouragement. Recently, we were both partners on a doctoral network grant application and it is hard to think that we have missed another opportunity to collaborate in a more direct way.

One of my last memories of Ulrich is at the ETRS 2022 meeting that was held in Lyon in the last days of his presidency of the ETRS society. We were a small group of people stuck in the overcrowded tram when I saw pickpockets trying to open the backpacks of some of us. I told everyone to be careful and Ulrich said as a joke: "You saved our lives!" One year later, these words sound terrible. Obviously not at the right moment. But I trust that, collectively, we can keep Ulrich's spirit alive and continue to promote generosity and mutual esteem within our community.

Catherine Moali



Contributions from the Protease Community

Ulrich was a valued friend, colleague, and collaborator, who I interacted with regularly for the past 15 years. I first met him when he was a post-doctoral fellow. I will remember him always as unfailingly gracious, cultured, kind, unassuming and friendly, and at the same time a scholarly, meticulous, and generous scientist. From members of his lab, I also learned that he was a thoughtful, constructive, and kind mentor. Two of my group visited him a few years ago at DTU and he received them with the kindest hospitality. In turn, he visited us in Cleveland to give a seminar and advise on degradomics. There is little question that without his encouragement and guidance it would have been impossible for my lab to embrace degradomics so fully. My lab members felt comfortable approaching him regularly for troubleshooting and he was always responsive and helpful. I think it gave him a great deal of pleasure to have helped spread this expertise around the world. I spent some time with him at a meeting in Israel this June, and as we always did, we talked about classical music, since he was a serious violist who played with his wife in a semi-professional orchestra, cycling, which was a shared interest, and of course, proteomics. We talked about a future visit to Cleveland- I was looking forward to arranging a visit to a local luthier who has made several violas, which Ulrich had expressed interest in, a bike ride with a violist friend in the Cleveland Orchestra, and a concert if the timing of his visit was right. And of course, to a day of diving deep into technology and data. I learned of his passing with profound sadness, and I mourn the loss of a fine person who already at a young age had made a significant mark on the protease field, not only through his work, but as a role model, mentor and community builder. Ulrich was important for the future of the field. His many accomplishments to date promised so much more in coming years. We will all miss him greatly at every meeting where we would expect to see him. My group and I join the protease field in conveying to his family our sense of loss, our memories of the time with him and our deep appreciation for his kindness, generosity and friendship.

Suneel S. Apte

It was at night in a hot spring of a resort in the middle of the Californian desert when Ulrich and I first met in April 2009. I had joined Matthew Bogyo's lab as a research intern during my Master's just a week earlier and thankfully was allowed to join the Pacific Coast Protease retreat which Ulrich attended as a postdoc with Chris Overall. I do remember this vividly as this meeting was my first encounter with the wider protease community and it comprised all the things that I still enjoy: Great science with excellent, diverse and thorough talks, a relaxed atmosphere during fun activities on the side, and a really welcoming group of people. Ulrich was instrumental in making this a positive impression as despite the seniority difference he approached me casually and introduced me to others. Coming from a German university, my stay in Matt's lab and this PCP changed my perception of what science can be like and got me hooked on proteases and chemical biology alike with a lasting effect - and in addition to the Bogyo team I very much credit Ulrich with this. He asked both about the day's talks as well as about living in a different country and showed a genuine interest. I would think that many who have seen him avidly touring posters at meetings and having in-depth discussions about the diverse topics present at protease meetings, where he really was a fixture, would agree. We kept in contact over the years, met at various meetings and both in Switzerland and in Copenhagen, and I am thankful for his valuable input before every career move I have made. As such I remember him not only as a passionate and smart scientist, but also as a caring and well-meaning mentor. Ulrich's passing is saddening on so many levels and I wish his family and friends strength and healing while we mourn his loss. I am thankful for having met him and am certain that his memory and manifold contributions to his community will not be forgotten.

Malte Gersch

Contributions from the Protease Community

The first time I met Ulrich auf dem Keller must have been at the Pacific Coast Protease meeting in 2006 or 2007. The meeting has been organized since 2004 as a joint meeting between the labs of Matt Bogyo (with whom I performed my post-doctoral fellowship), Guy Salvesen and Chris Overall (where Ulrich did his post-doc work). It was set up as a meeting in which trainees gave most talks, and a few invited speakers talked about recent or unpublished protease research.

Cellphones did not have cameras back then (at least, mine didn't), and posting selfies on Twitter or Instagram was not a habit yet. On an old CD-ROM, I could only find one picture of Ulrich during a hike in the desert. It was taken at the PCP2007.

Ulrich was smart, driven and very friendly. During the social sessions at PCP we talked about our ambitions to become principle investigators ourselves in the future. We both had a focus on applications in Europe, and I was happy that we both managed to obtain academic positions – he in Zürich, Switzerland and I in Munich, Germany. Although we both had a love for proteases, our research diverged, because of our different approaches and technical expertise. Nevertheless, I kept following his work and I occasionally met him at a protease conference.

I was shocked to hear that Ulrich recently died.

Why do some talented scientists die young? It happens without justification, and there's nobody to ask for an explanation.

But death doesn't mean you are gone. I will think of Ulrich in upcoming meetings, even when he is not present. I will hear his voice saying "right, right, right" at poster sessions, when he would agree with something I was saying.

I will end with a quote of Charles Bukowski that we should "live our lives so well that death will tremble to take us."

Steven Verhelst



Contributions from the Protease Community

It was such a shock to receive the terrible news about Ulrich's passing. We knew Ulrich basically through his PhD supervisor, and then, talked to him often as our good friend and highly respected protease peer. His contributions to the family of protease researchers are invaluable! The world of proteolysis is a fantastic field, where fairness and support and friendship are so much valued and lived! We do feel connected and are deeply sorry about having lost Ulrich, a very good friend. Ulrich was so engaged, motivated and motivating, and reliable in all aspects – no matter, whether this was for the next conference or winter school, or the next consortium management meeting. Ulrich combined so many different facets, including his deep empathy and a rich source of humor. Ulrich will be missed as our dear member of the protease community! His support of students, including undergraduate students whom he accepted in his group as interns, was unique. His generosity in offering support with research projects, is so highly appreciated. Personally, we will remember Ulrich as a great inspiration for all of us and especially for the young generation of scientists.

**Hans Brandstetter and Klaudia Brix ,
for the Winter School on "Proteinases and Inhibitors" in Tiers**

Ulrich was a wonderful colleague who will be profoundly missed. I always enjoyed seeing him at conferences and was invariably impressed by his presentations, the high quality of his innovative work and the insights it provided. I last saw him at a conference in Kiel in 2022, where we had a stimulating discussion about common interests. We made plans to start a collaboration on the topic of chronic wounds, one of Ulrich's specialties that is a new area for my lab. Ulrich graciously offered to help and provide advice and access to his data on chronic wounds in patients. I was planning to contact him this fall to follow up, when I heard the sad news of his untimely death. My thoughts and heartfelt condolences go out to his family and his friends and colleagues for this unfathomable loss.

Carl Blobel



I am still shocked by the sudden death of Ulrich. My last in-person meeting with him was last fall, when we sat together on the bus for nearly two hours. We not only discussed science and possible joint projects, but also our families and our shared love for classical music. For example, we planned to attend a concert together in the Symphony Hall in Zurich, where he lived. Sadly, none of that will be possible.

Ulrich was a passionate, creative and excellent scientist, a great communicator and networker, very helpful to others and dedicated to the research community, for example as IPS president. He was a great friend and I miss him sadly.

Stefan Lichtenthaler

Contributions from the Protease Community



I can't quite recall when I first met Ulrich - no doubt it was at one of the IPS or GRC protease meetings. He was giving a talk and I recall being very impressed with both his science and his demeanor. We continued to run into each other at these meetings and always had engaging and cordial conversations. I got to know him a little better when he was elected to IPS council and we overlapped. He was a dedicated officer and served the IPS with great leadership. My last interactions with Ulrich were in Singapore at IPS2023. I suggested we get a (past and current) President's photo, which I am glad we have. And we sat together one evening at

the hotel, having a beer and chatting about science. We had even envisioned a potential collaboration. I will miss seeing Ulrich at our meetings and will remember him as a great scientist and a truly wonderful colleague - super nice person as well!

Bob Lazarus

Ulrich was such a wonderful, kind person and a smart, collaborative, and insightful scientist; it is still very difficult to accept that he is no longer with us. I had the privilege and pleasure to know Uli for many years – starting from when he was a postdoc in Chris Overall's lab, and we began a wonderful collaboration between my lab and the Overall lab. Uli and Anna Prudova teamed up with Leny Gocheva, a graduate student in my group, to apply their powerful TAILS technology to help unravel the complexity of cathepsins in multistage cancer by identifying cathepsin substrates in vivo. Uli was critical in advancing this ambitious collaboration, and he brought so much creativity, enthusiasm, and many key insights to help us take it to completion together. When Uli returned to Zurich he invited me to give a talk at ETHZ – which was actually my first trip to Switzerland. I had a wonderful time with Uli and Sabine Werner, and I really fell in love with Switzerland during that trip, so I have Uli to thank for ultimately ending up living here! Uli was also such a positive and happy person, I used to always look forward to seeing him at the protease meetings – he would speak with equal enthusiasm about his science, his family, and his music. Uli was truly emblematic of all that is so great about the welcoming and incredibly supportive protease community.

I miss you very much Uli, and thank you for all that you did to enrich our lives. My heartfelt condolences to your family, friends, lab, and colleagues.

Johanna Joyce

Contributions from the Protease Community

Although we had crossed paths at many PCP, IPS, and GRC meetings over the last decade, I did not know Ulrich very well. I have always greatly admired his work and have spent countless hours poring over datasets in his published papers. In 2018, I had an idea for a project I wanted to do based on some of his findings in human wound fluids. I started to do some preliminary experiments, but the pandemic and two maternity leaves led me to put it on the back burner. Seeing Ulrich in Singapore inspired me to think about this project again. The night before I learned of his passing, I was coincidentally talking to my husband about him. I said that Ulrich was a clear leader in the field and that I was intending to approach him about writing a collaborative paper. I was also reflecting on the amazing presentations that he always gave. Ulrich had an astounding eye for data visualisation and his slides were always impressively meticulous. He was an extremely effective and inspiring communicator. Needless to say, I was shocked and devastated when I woke up the next morning to the message that he was gone.

In addition to sorrow and sympathy for his loved ones, I feel overwhelmed with a deep sense of regret that I did not seize the opportunity to learn from Ulrich when I had the chance. In assembling this special issue of QuickCuts, I have learned so much more about Ulrich than I ever did during his life. This has only augmented the feelings of regret. He was so obviously valuable to so many in our community – incredibly talented and insightful, generous with his time, and supportive of young scientists. The field will no doubt be set back by the loss of what Ulrich had to offer. We can be assured that the outstanding scientists that he so diligently trained will carry on his legacy. My student Alex was fortunate to attend the degradomics workshop he delivered in Singapore, and he has been anxiously awaiting the release of CLIPPER 2.0. This pipeline will undoubtedly be valuable for our work and the wider field.

Vale Ulrich, you are missed.

Laura Edgington-Mitchell



Introducing CLIPPER 2.0

Peptide level annotation and data analysis for positional proteomics

Konstantinos Kalogeropoulos^{1*}, Aleksander Moldt Haack^{1*}, Elizabeta Madzharova¹, Antea Di Lorenzo¹, Rawad Hanna², Erwin M. Schoof¹, Ulrich auf dem Keller¹

¹Department of Biotechnology and Biomedicine, Technical University of Denmark, Søtofts Plads B221, Kgs. Lyngby, 2800, Denmark.

²Faculty of Biology, Technion-Israel Institute of Technology, Technion City, Haifa 3200003, Israel.



Abstract Positional proteomics methodologies have transformed protease research, and have brought mass spectrometry (MS)-based degradomics studies to the forefront of protease characterization and system-wide interrogation of protease signaling. Considerable advancements in sensitivity and throughput of liquid chromatography (LC)-MS/MS instrumentation enable generation of enormous positional proteomics datasets of natural and protein termini and neo-termini of cleaved protease substrates. However, such progress has not been observed to the same extent in data analysis and post-processing steps, which arguably constitute the largest bottleneck in positional proteomics workflows. Here, we present a computational tool, CLIPPER 2.0, that builds on prior algorithms developed for MS-based protein termini analysis, facilitating peptide level annotation and data analysis. CLIPPER 2.0 can be used with several sample preparation workflows and proteomics search algorithms, and enables fast and automated database information retrieval, statistical and network analysis, as well as visualization of terminomic datasets. We demonstrate our tool by analyzing GluC and MMP9 cleavages in HeLa lysates.

Full text is available at <https://www.biorxiv.org/content/10.1101/2023.11.30.569335v1>

CLIPPER 2.0 is available at <https://github.com/UadKLab/CLIPPER-2.0>.

