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Charles David Allis (1951–2023)

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Charles David Allis, a world-renowned leader in the field of chromatin biology, passed away on 8 January 2023, at the age of 71. Like many, we were deeply shocked, devastated and heartbroken. We take comfort in knowing that Dave spent the last few days surrounded by family. We remember and celebrate Dave for his enormous impact on biomedical science, for his inspiring mentorship, magnanimous collaboration and genuine friendship, and for being an overall wonderful person.

Dave was born and raised in Cincinnati, Ohio. He earned a bachelor's degree from the University of Cincinnati in 1973 and a PhD in developmental biology from the Mahowald lab at Indiana University in 1978. Starting with postdoctoral research in the Gorovsky lab at the University of Rochester, Dave dedicated the rest of his career to pioneering research in chromatin biology, in which he made numerous groundbreaking discoveries that profoundly shaped the field. In many ways, Dave was ahead of his time. On the basis of his earlier work with the ciliate *Tetrahymena*, Dave recognized that histones had roles beyond being the inert spools around which nuclear DNA winds. In 1996, Dave and James Brownell, a graduate student in his lab, published a landmark paper that identified the first histone acetyltransferase as a homolog of the yeast transcriptional co-activator Gcn5 (ref. [1]). This discovery, together with previous genetic studies (especially those from the lab of Michael Grunstein at the University of California, Los Angeles), revolutionized the chromatin field by unambiguously linking specific chemical modifications of histone proteins to transcriptional regulation. These discoveries launched exponential growth in understanding how chromatin regulates the genome. With the Allis lab having a leading role, this research had far-ranging effects on our fundamental understanding of human health and disease.

Dave's boundless passion for science and discovery was unparalleled. His many insightful predictions on the function and regulation of histone modifications were inspired by patterns of amino acid sequences and modifications of the disordered histone

tails, which Dave famously cataloged on his office whiteboard. Dave's mantra about histone primary sequence became 'every amino acid matters'. His overarching 'histone code' hypothesis predicted that patterns of histone modifications – regulated by their site-specific 'writers', 'readers' and 'erasers' – can affect the structure and function of a nucleosome to regulate gene expression[2,3]. To test this hypothesis, Dave also recognized the importance of developing and using histone modification-specific antibodies. Dave's early partnership with companies to distribute these antibodies enabled countless studies into the mechanism and function of these modifications and helped to speed the advancement of many new antibody-based technologies. Throughout his career, his genuine interest in others' science attracted many trainees and long-term collaborators. Together, Dave and his extended 'Allis lab family' explored a wide variety of model systems, ranging from single-celled yeast and ciliate to fruitflies, frogs, mice and patient-derived cancer cells for investigation. Hence, the term 'zoo blot' was coined by Dave to refer to immunoblots of histones from various organisms and cell models. The scientific tools and discoveries made in Dave's lab have deepened our understanding of basic gene-regulatory mechanisms in normal development and physiology as well as in human diseases, notably cancer, and invigorated potential therapeutic strategies.

Dave influenced his trainees and the broader scientific field with his humility, kindness, humor and relentless optimism. He had a playful sense of humor and valued a lively and sometimes eccentric laboratory culture. Perhaps it was his upbringing in Ohio that imbued Dave with a friendly and genuine manner of communicating with others, characterized by an informal and folksy style. Rather than catering to experts in the field, Dave used humor to tailor his seminars for accessibility. With his clever use of puns and cartoons, he had a rare gift of being able to simplify the most complex concepts.

Dave's office and the Allis lab walls were adorned with photographs and mementos from his former and current laboratory members, showcasing both his enthusiasm for science and the people he worked with. He jokingly referred to himself as a 'cheerleader' rather than a PI, capturing both his positive encouragement style of mentorship and self-effacing generosity. He was certain to credit and promote the careers of his trainees, collaborators and colleagues. Dave was not only an incredibly supportive mentor, but also a true leader who inspired and motivated those around him through his dedication and commitment to their career development and future success. Dave's pencil-on-plain-paper notes were famous, with hypotheses and ideas for novel histone modification readers, and every amino acid in the histone H3 tail scribbled in his distinctive handwriting, discreetly left on trainee's desks before most of the lab were even awake. But none brought more joy to scientists in the group than his ecstatic 'Good show!' written across the top of a new manuscript galley proof, a draft of a successful grant application, or a picture of a newborn baby.

Along with our Allis lab family colleagues and everyone touched by Dave's enthusiastic embrace of science and people, we deeply mourn his passing. We feel privileged and grateful to have had Dave as a mentor, colleague and friend. We will be forever grateful for his guidance and unwavering support. We know that his scientific and personal legacy will live on in the lives and careers of the many people around the world whom he inspired, taught, mentored and showed by example how to do great science while being a magnificent person.

CREDIT: ALEXANDER RUTHENBURG

Obituary

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