



International Society for Neuroethology

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International Society for Neuroethology
P.O. Box 1897
Lawrence, KS 66044, USA
Website: <http://neuroethology.org/>
Facebook: <https://www.facebook.com/groups/neuroethology/>
E-mail: isn@allenpress.com

PHONE: +1-785-843-1235
(or 1-800-627-0629 Ext. 233)
FAX: +1-785-843-1274

ISN Officers

President: Eric Warrant, Department of Biology, Lund University, Biology Building, Sölvegatan 35
223 62 Lund, Sweden
PHONE: +46 46 222 93 41
E-mail: eric.warrant@biol.lu.se

Treasurer: Mark Bee, Department of Ecology, Evolution, and Behavior, University of Minnesota, 140 Gortner Laboratory, 1479 Gortner Avenue, Saint Paul, MN 55108 USA
PHONE: +1-612-624-6749
E-mail: mbee@umn.edu

Secretary: Gabriella Wolff, Department of Biology, University of Washington, Box 351800, Seattle, WA 98195-1800 USA
E-mail: gabwolff@uw.edu

Past-President: Catharine Rankin, Department of Psychology, Kenny Room 3525 – 2136 West Mall, University of British Columbia, Vancouver, BC Canada V6T 1Z4
PHONE: +1-604-822-5449 FAX: +1-604-822-7299
E-mail: crankin@psych.ubc.ca

President-Elect: Karen Mesce, Department of Entomology and Graduate Program in Neuroscience, University of Minnesota, 219 Hodson Hall, 1980 Folwell Avenue, Saint Paul, MN 55108 USA
PHONE: +1-612-624-3734 FAX: +1-612-625-5299
E-mail: mesce001@umn.edu



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The Prez Sez

Eric Warrant
President of the ISN



Hello everyone!

It is a very strange feeling indeed knowing that I should have met so many of you only a month ago in Lisbon, at what would have been our fantastic Congress. I guess for you, like for me, this summer has not been quite what we expected half a year ago. The world is now a very different place because of COVID-19. But while having to postpone our congress was a major upheaval for the society, it is nothing compared to the upheavals

experienced by so many who have lost loved ones, lost their livelihoods or lost physical contact with relatives and friends due to lockdown restrictions. As an international society, our members live across the globe and the impact of the virus has varied greatly from country to country. I do hope sincerely that its impact on you and your family has been minimal.

As the old adage goes, “Necessity is the mother of invention”. So I think for me personally, one of the more positive results of our current crisis is the realisation that meeting together online, while no substitute for the real thing, is nonetheless remarkably effective (and can teach us lessons about how to reduce the need to travel for less important meetings, which is good not only for our planet, but also for reducing stress). I have been incredibly impressed by the grassroots initiatives by society members to organise symposia online to boost morale and to give (especially) our younger members the vital format needed to present their work and get feedback from their peers. Sharing our science with each other has always been the bedrock of our existence and our modern technologies have allowed this to happen, despite these darkest of days. I suspect I am not alone in wondering how we would have managed if COVID had hit us 30 years ago. So last month I had the pleasure of participating in an ISN-sponsored two-day symposium on Insect Navigation organised by **Barbara Webb**, **Paul Graham** and **Ajay Narendra**, which I am happy to report was an outstanding event, and a roaring success! I was really impressed how well a poster session can work online and how easy it was to interact with other attendees. It was not trivial to juggle talks and posters over all the time zones of the world, but they did a great job. The two first prize winners for talks and posters (**Charlotte Doussot** and **Léo Clement**) each received a two-year membership of the society, and all winners – including the second prize winners **Tu Anh Nguyen Thi** and **Rochelle Meah** – received a copy of **Rudiger Wehner’s** magnificent new book *Desert Navigator*, the sumptuous tale of his many decades of work studying the navigational toolbox of the desert ant *Cataglyphis*. Our two Early Career Representatives – **Miriam Henze** and **Sara Wasserman** – have compiled a list of other online events that will be of interest to many of us. You can see their suggestions later in this newsletter.

Despite COVID, the last few months have been incredibly busy ones for the society. Firstly, our dedicated committees for deciding prizes and awards have done their usual magnificent job and chosen many wonderful winners. Our prestigious Capranica Prize was won by **Wujie Zhang** from the University of California, and our equally prestigious Young Investigator Awards were won by **Jerome Beetz** and **Pauline Fleischmann**, both from

the University of Würzburg, **Angie Salles**, from Johns Hopkins University and **Rickesh Patel** from the University of Maryland. To compensate for the fact that our Young Investigators this year missed presenting their work at our dedicated session at the Lisbon congress, we are currently making plans to have an online Young Investigator symposium later in the year. We will spread the word to everyone as soon as the details are fixed. Our Konishi Neuroethology Research Awards were won by **Zahra Bagheri** (University of Western Australia), **Maria Sotelo** (University of Michigan) and **Juan Salazar** (University of Chile). This year we also awarded six Heiligenberg Student Travel Awards: **Payel Chatterjee** (NCBS, Bangalore), **Megan Freiler** (Indiana University), **Lily Fogg** (University of Queensland), **Lukas Anneser** (Max Planck Institute for Brain Research), **Clarice Biebold** (Johns Hopkins University) and **Maitri Manjunath** (NCBS, Bangalore). My heartiest congratulations, on behalf of your society, to all of you!

And while we are on the topic of congratulations, it is my immense pleasure to announce this year’s ISN Fellows, elected from the nominations of our members. Being elected as Fellow of the ISN is our most prestigious honour, and this year sees the election of two highly distinguished neuroethologists – **Susan Fahrback** from Wake Forest University and **Hans-Ulrich (Uli) Schnitzler** from the University of Tübingen. Susan is renowned for her work elucidating the mechanisms of neural plasticity in honey bees, and she served as ISN Secretary from 2012-2018. Uli was a founding member of the society, and is famous for unravelling the fundamental auditory principles used by echolocating bats to localise and intercept insect prey. Congratulations for your well-deserved elections as Fellows!

And finally, in a year already marred by natural disasters and COVID-19, decades of racial discrimination boiled over in the United States following the dreadful murder of George Floyd. The seismic events that followed were felt around the world, stopping all of us to reflect on the presence of systemic racism within every level of society, including our academic institutions. Many of us are the products of a system tipped in our favour, even though we may not actually have realised it. The present awakening, to redress the wrongs of the past, is thus a call to action for all of us, your society included. While generating real and meaningful change takes time, and even though the ISN has long strived to increase diversity and inclusion within the society by supporting young scientists in less affluent countries, we have nonetheless recognised the need to be better. Our Inclusion and Diversity Committee, chaired by **Ana Silva**, is doing a great job of keeping this agenda on the front-burner of society business. On their initiative we are currently enacting a number of important

improvements, including the creation of a new Diversity in Neuroethology Award, for which we will soon begin seeking donations to get the new fund started. I am immensely grateful for the hard work of the IDC, especially during these pressing times.

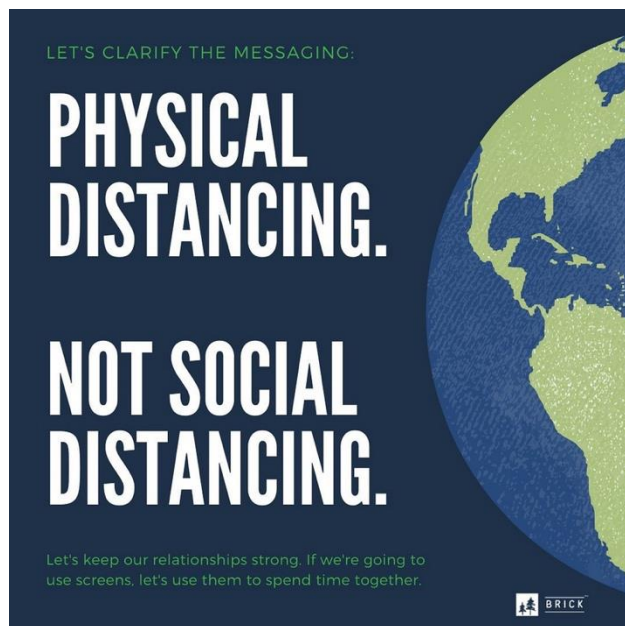
Many of us are now starting a new teaching term – for most of us online – and I wish all of you every success for your coming endeavours! And I well understand the worry and frustration experienced by those of you not able to get to the field to perform experiments – our Bogong moths in Australia are probably relieved to be spared from our interventions for some months to come! But we will miss them sorely....

My warmest regards, and I hope very much that you and your families are all well and remain safe!

Eric Warrant
President, ISN



EARLY CAREER PERSPECTIVE



Credit: GoBrickNow

FEELING ISOLATED IN TIMES OF COVID-19? GET INVOLVED ONLINE AND STAY SAFE!

Current travel restrictions and physical distancing rules caused by the Covid-19 pandemic have led to the cancellation or postponement of many in person gatherings like conferences, workshops and seminars, which would normally allow young scientists to get in

contact with other researchers, broaden their knowledge, and learn new skills.

However, don't despair! There are more and more online events and resources that offer **new opportunities**. For example, some **conferences** are **being held virtually** now. Costs to participate are a fraction of what they would have been otherwise. Some are even free of charge! This makes it affordable to have a glimpse of areas a bit off topic and get new inspirations. Try it out!

Seminar series have moved **online**, too. Many of them are open to anyone who registers with the organizer beforehand. It doesn't matter where you are on this planet. You only need to have a somewhat stable internet connection. Why not listen to some of the seminars organized on another continent, if the topic seems to be interesting?

You can also attend **virtual workshops** and **online courses** to gain certain skills from the safety of your home. Of course, this is not suitable for every qualification you need to successfully complete your research project, but there are plenty of options to educate yourself in areas that could be useful for your career.

Below, we've compiled some resources to get you started. Browse the internet using your own keywords and you'll hopefully find similar opportunities tailored to your personal interests. Posts on the [ISN Facebook page](#) are also a good source to find relevant events.

If you wish to have more assistance during these difficult times (or at other times), consider joining the **ISN Mentorship program**, which provides a forum for more experienced members of the ISN to share knowledge and advice with less experienced members. You can find information on the program [here](#) and sign up, when you are logged into your [ISN membership account](#). If you experience any difficulty registering, please contact [Sara](#) or [Miriam](#).

Seminars

[Neuroscience seminars online](#): a huge resource initiated by the Oxford Neurotheory Forum that lists online seminars worldwide on any teleconferencing platform. Search for your preferred topic among hundreds of seminars by selecting a keyword. If you organise a seminar yourself, you are invited to advertise it via this website and a related mailing list.

[Virtual Programs Webinar Series of the Marine Biological Laboratory, The University of Chicago](#): These free events ran from July 6 to July 21 and recordings are now accessible via the play button to the right of each

listed seminar, for example, this seminar on [Neural Systems and Behaviour](#).

[Upcoming online seminars at the Max Planck Institute \(MPI\) for Chemical Ecology](#): The last one advertised at the time of writing was going to take place September 3, 2020. Check the [MPI Facebook page](#) for recordings of some of the past seminars such as this one on [Insect Antennae](#). Please note that seminars at the MPI are given in English or German.

[Online seminar series of the CIE \(Centre for Integrative Ecology\)](#) at Deakin University: Seminars are live-streamed and often uploaded to the CIE's You-tube channel afterwards like these talks on [Numerical ability and quantity use in honeybees](#) and [Costs, benefits and the evolution of seasonal plumage colours](#).

[Neuroscience in times of quarantine](#) - an online lecture series to stimulate your brain organized by Martin Giurfa at the University Paul Sabatier of Toulouse: The last seminar before the summer break took place July 21, 2020. Monitor the website or the [ISN Facebook page](#) for updates on this series.

[ISN Young Investigator Award Zoom session](#): A live event for ISN members tuning in from all over the world to be held in November 2020. The session will also be recorded. Check the [ISN Facebook page](#) and ISN emails for updates.

Workshops and conferences

Virtual [junior scientist workshop on Mechanistic Cognitive Neuroscience](#) hosted by Janelia, USA: November 15-20, 2020. Application deadline is September 15, 2020.

[From Images to Knowledge with ImageJ & Friends](#), virtual conference hosted by Janelia, USA: November 30-December 2, 2020.

Janelia conferences planned for 2021, several of them with a focus on neurobiology, might be changed to an online format, too. Check [Janelia's conference page](#) for updates.

[Online Bernstein Conference for Computational Neuroscience](#): September 29-October 1, 2020. Register at least one week ahead of the event **for free!**

[ASSAB \(Australasian Society for the Study of Animal Behaviour\) Virtual Conference](#): September 28-October 2, 2020. The call for abstracts has passed, but you can still register to attend the conference.

[CIE \(Centre for Integrative Ecology\) Virtual Annual Conference](#): October 8-9, 2020. Register no later than September 20 **for free!**

Other activities to lift your spirits while isolating

Browse [The History of Neuroscience in Autobiography](#): a free collection of autobiographical chapters on the lives of senior neuroscientists. Enjoy their often humorous and touching personal narratives about the forces that shaped their career paths and led to prominent discoveries.

Make a paper model of your study animal ([Origami instructions](#)), practise [hairstyles for Halloween](#) or test your fine motor skills by trying [science & space](#) or [animal nail art](#).

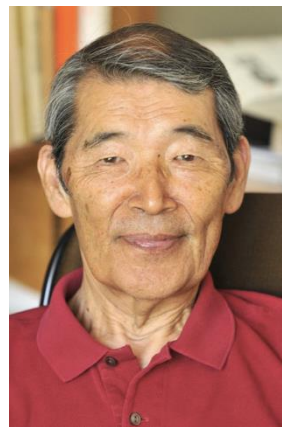
Kids at home? Entertain them with simple science experiments. There are plenty of helpful pages full of fascinating ideas on the internet. [Science kids](#) and [Science Bob](#) are just two examples.



REMEMBERING MARK KONISHI

Masakazu (Mark) Konishi, the Bing Professor of Behavioral Biology, Emeritus, passed away on July 23. He was 87 years old. Renowned for his work on the neuroscience underlying the behavior of owls and songbirds, Konishi joined the Caltech faculty as a professor of biology in 1975 and became the Bing Professor of Behavioral Biology in 1980.

Reproduced with permission from **Lori Dajose, Caltech**



Masakazu (Mark) Konishi

Since the early 1960s, Konishi was a leader in the field of avian neuroethology—the neurobiological study of natural behavior, such as prey capture by owls and singing in songbirds. In his laboratory at Caltech, Konishi advised dozens of graduate students and postdoctoral scholars. His team worked extensively on the auditory systems of barn owls, which use their acute hearing to home in on prey on the ground, even in total darkness. He first theorized and then showed experimentally that young birds initially remember a song learned from a "tutor" bird, usually a parent, and use the memory as a template to guide the development of their own song.

"The passing of my former PhD adviser Mark Konishi is a huge loss not only to the many friends, colleagues, and students of his, but to the entire research community and to Caltech," says Ralph Adolphs (PhD '93), Bren Professor of Psychology, Neuroscience, and Biology. "Mark's distinguished career was notable, among other things, for running essentially two labs at Caltech: one on understanding how the brains of songbirds learn and produce song, the second on understanding how the brains of owls allow them to hunt rustling rodents even in complete darkness."

"Mark's laboratory was characterized by an emphasis on complete freedom, and that spawned independence and creativity," Adolphs continues. "When I started as a graduate student, I was terrified, since I knew nothing. When I came back as faculty to Caltech in 2004, I felt I knew how to run things, and it was because of my experience with Mark's paramount emphasis on ideas and pursuit of the big open questions."

"For me, Mark Konishi's attitude toward science, and his influence on those he mentored, exemplifies exactly what Caltech is all about: tackling what you really want to find out, not what somebody tells you to find out," Adolphs adds. "Of course, the constraints in doing science are different nowadays than they were in the 1980s. But I hope that Mark's spirit will help us to keep these ideals in mind. The very first 10 minutes of my first conversation with Mark—at the time merely interviewing to be his graduate student—were telling. I asked him a lot of questions, to most of which he replied, 'I don't know.' After 10 minutes, he reflected and said: 'I can promise you just one thing. That you will have fun doing science.' That I did, and I will be forever grateful to Mark for it."

Konishi was born in Kyoto, Japan, on February 17, 1933, the only child of two silk weavers. Konishi's future scientific interests in animal behavior were foreshadowed by his childhood hobbies. "As the only child, my best playmates were animals including insects, fish, rabbits, and dogs," he wrote in a 2008 autobiography for the Society for Neuroscience.

During high school, Konishi joined his school's mountaineering club and led the school's biology club. According to Konishi's autobiography, these club activities helped him "come out of [his] only-child cocoon." Influenced by his high school biology teacher, he applied and was accepted to Hokkaido University in Sapporo, Japan. There, he discovered an interest in neurophysiology, and he conducted research studies on the behavior of snails, marine invertebrates, and birds.

After receiving his Bachelor's and Master's of Science degrees at Hokkaido, Konishi attended UC Berkeley for his PhD. It was on the ship crossing to the United States that Konishi chose to begin using the name "Mark," because of the letters it shared with his given name, Masakazu. At Berkeley, working with Professor Peter Marler, Konishi focused his doctoral research on the idea of central coordination: how complex behaviors, like a bird's singing, can be coordinated by a central neural system.

As he wrote in his autobiography:

"The Marler laboratory had a menagerie of animals ranging from fish to unusual mammals like kinkajous and a badger. No one seemed to be bothered by the crowing of my roosters, which I kept in an old greenhouse for plants in the central courtyard of the building. [...] Because we did not have enough soundproof boxes to house a large number of birds individually, I put all my deaf passerines in separate cages within a penthouse on the roof of the Life Science Building. I lined the penthouse walls with cheap sound absorbing materials. I spent most of my daytime sitting there listening and recording, because nothing was automated as it is today. I made about 3000 sonagrams for my thesis."

Konishi spent several years in Germany as a postdoctoral researcher before beginning an assistant professorship at Princeton, where he began to study owls. When he moved to Caltech in 1975, Konishi brought 21 owls with him.

"The sequence of events that led me to move to Caltech in 1975 seemed simple. Jack Pettigrew, who was then an assistant professor at Caltech, came to see me in Princeton, mainly because he wanted to see my owls, I thought. Shortly after this visit, I got an invitation to give a talk at Caltech. I was offered a full professorship, and I was quite impressed by the size and quality of space they could provide. This was in sharp contrast to Princeton where my laboratories were in the basement of one of the oldest buildings on campus. However, I had to overcome the anti-Los Angeles prejudice I acquired in Berkeley. I had to think very hard and long, before I could make up my mind. I excused myself by convincing me that even Southern California is better than New Jersey. Caltech turned out to be a very exciting new center of neurobiology."

While at Caltech, Konishi and his collaborators made significant discoveries about the neural bases of behavior in owls and songbirds.

Michael Dickinson, Caltech's Esther M. and Abe M. Zarem Professor of Bioengineering and Aeronautics,

explains that Konishi pioneered neuroscience research in birds before modern tools like genetic model organisms were available as aids.

"Mark and his protégés demonstrated that the brains of barn owls possess a three-dimensional map of space constructed from auditory information, thus showing that owls can 'see' the world with their ears," Dickinson says. "This research helped establish how all brains, including ours, use sensory information to construct elaborate maps of the environment. Other work in Mark's lab helped determine how young male songbirds learn and practice the songs of their fathers so they can reproduce those precise melodies later in life to attract females. This research helped establish songbirds as important models for understanding motor learning and language acquisition."

Dickinson adds, "Mark Konishi was instrumental in establishing Caltech as an early powerhouse in neuroscience through the uncompromising quality of his research and his ability to recruit some of the brightest minds to his laboratory. Caltech is extremely fortunate to include Mark as part of its intellectual history. Like all great scientists, his legacy will impact generations of students."

Shinsuke Shimojo, Caltech's Gertrude Baltimore Professor of Experimental Psychology, says Konishi meant a great deal to many scientists, including himself, who Konishi helped bring to Caltech.

"How lucky I was! I learned from him that human sensory systems have to be understood in a broader comparative, biological context. But more critically, I learned from him how a scientist's life can be happy and creative at the same time. He was a great mentor and a superb adviser to colleagues. His ability to view the long run certainly guided Caltech biology and neuroscience significantly. He was always gentle, creative, and calmly humorous. His spirit will not only be remembered but will continue to guide us in this challenging period," Shimojo says.

Konishi was the Bing Professor of Behavioral Biology until his retirement in 2013. From 1977 to 1980, Konishi served as the executive officer for biology in the Division of Biology and Biological Engineering (then the Division of Biology). He was a recipient of numerous awards, notably: the F. O. Schmitt Prize (1987), the International Prize for Biology (1990), the Lewis S. Rosenstiel Award from Brandeis University (2004), the Edward M. Scolnick Prize in Neuroscience from MIT (2004), the Gerard Prize from the Society for Neuroscience (2004), the Karl Spencer Lashley Award from the American

Philosophical Society (2004), and the Peter and Patricia Gruber Prize in Neuroscience from the Society for Neuroscience (2005). He was a member of the American Academy of Arts and Sciences, the National Academy of Sciences, and the International Society of Neuroethology, for which he served as president from 1986–89.

"Mark was a champion of behavioral neuroscience, a leading figure, and someone who embodied Caltech's unique way of doing science," says Gilles Laurent, a former Caltech faculty member now at the Max Planck Institute for Brain Research. "His support of idiosyncratic approaches to neuroscience, his mentoring of so many now-leading neuroscientists, and his founding of experimental research areas and contributions to them are all lasting monuments of experimental neuroscience. On top of this, Mark was a shining example of humility, kindness, humanity, and verbal sobriety, with touches of subtle yet very sharp humor."



KONISHI AWARD REPORT

Each year, the ISN presents an outstanding early-career member with the Konishi Neuroethology Research Award, in honor of Masakazu (Mark) Konishi. 2019 awardee **Torben Stemme** (Ulm University) reports on his research into arachnid neuroanatomy and olfactory behaviors, funded in part by this award.



Torben Stemme

This project was designed to investigate main aspects of the solpugid malleolar pathway in detail: Projections of sensory neurons towards the brain, descriptions of neuropil structures, and projections within the central nervous system towards higher integration centers. Equal relevance was attributed to functional aspects: behavioral assays should provide insights into the use of the malleoli in prey or mate localization.

Progress and scientific findings of the project:

Behavioral role of the malleoli

At an early stage of the project, I realized that sun spiders are rather difficult to motivate for behavioral assays, at least under laboratory conditions. The animals built burrows and were seen on the surface only occasionally.

Nevertheless, they did not seem to be suffering from insufficient or wrong animal care. Some individuals even moulted successfully in the laboratory. However, due to inactivity of the specimens, I decided to skip the behavioral aspect for the sun spiders and switch to scorpions instead, another focus group of my research interests. Here, we could show that scorpions are able to perform directed navigation towards their home burrows over appreciable distances (~17 body lengths). These homing bouts do not rely on visual input nor on chemosensory or textural stimuli, but rather on proprioceptive cues – pointing towards path integration (Prévost and Stemme, 2020).

Currently, the newly purchased infrared system is used for investigating olfaction in scorpions and chemoreception in whip scorpions. It is already clear that this setup will be an essential part of many future experiments in my lab.

Neuroanatomy of the malleolar system

Using different techniques of neuronal tracing (Neurobiotin forward fills, lipophilic dye insertion), we unraveled many aspects of the malleolar pathway. Differential tracing experiments on distinct malleoli proved a quite homogenous innervation pattern of the glomeruli within the malleolar neuropil (Stemme and Wolf, in preparation). This suggests that the afferent projection pattern of the solpugid malleoli is chemotopically organized (contrasting with our results in scorpions, the latter possessing a somatotopic innervation pattern in their primary chemosensory neuropils; Drozd et al., submitted).

By injecting lipophilic tracers into the malleolar neuropil, we traced projection neurons towards higher integration centers. Here, we detected a direct projection from the malleolar neuropil towards the mushroom bodies (Stemme and Wolf, in preparation). Further, we found strong evidence for a direct connection of the malleolar neuropil and the pedipalpal neuropil. The pedipalps possess a second chemosensory organ in their tip region. Thus, signals from both chemosensory systems appear to be integrated directly in Solifugae, before reaching higher processing centers like the mushroom bodies.

Further Reading:

Prévost ED, Stemme T (2020): Non-visual homing and the current status of navigation in scorpions. *Animal Cognition*. doi.org/10.1007/s10071-020-01386-z.

BLACK LIVES MATTER: REVISITING CHARLES HENRY TURNER IN TIMES OF CHANGE

Martin Giurfa¹ and Gabriela de Brito Sanchez¹

1: Research Centre on Animal Cognition, Center for Integrative Biology, CNRS, University of Toulouse, 118 route de Narbonne, F-31062 Toulouse, France

The Black Lives Matter movement has reached academia where historical reparations are also necessary to recognize the contribution of marginalized, oppressed and forgotten black scientists. A paradigmatic case in that sense is provided by Charles Henry Turner (1867-1923), the first African American to receive a graduate degree at the University of Cincinnati and author of numerous contributions on animal behavior. Vindicating Turner today is necessary, as he emerges as an inspiration for scientists fighting against different types of social adversity and prejudices.

The political wave of actions occurring in several countries following the death of George Floyd at the hands of Minneapolis police shows that times are changing dramatically in terms of how vast segments of our society perceive and respond to racism and social injustice against black citizens. The worldwide campaign “Black Lives Matter” has gone mainstream and is no longer localized in the U.S.A. but has extended to several countries, inducing significant questioning of heroes, myths and the way history and national identity have been built over decades. This movement has logically reached academia as academic institutions reflect social structures and may reproduce and perpetuate to different extents social inequalities.



Fig. 1 : Charles Henry Turner. From Encyclopedia Britannica (public domain)

A positive revision of scientific history is being promoted, aiming at vindicating merits and findings by black scientists unfairly forgotten in our current construction of scientific knowledge. This is the case of Charles Henry Turner (Fig. 1), an African American scientist who was a zoologist and educator known for his various contributions on the behavior of many animal species¹. Born in Cincinnati, Ohio, in 1867, Turner was the first African American to receive a graduate degree at the

University of Cincinnati and most likely the first African American to earn a PhD from the University of Chicago. He was not given a chance to join a university as a faculty member due to dominant racism and was finally appointed as a teacher in a small high school for African Americans, the Sumner High School in St. Louis. Bibliographical accounts on Turner mention that he received an inappropriate pay and had a heavy teaching load at that school, and that he may have died of overwork in 1923, at age 56^{1,2}. Yet, at the same time, adversity did not impede him performing dozens of experiments in the fields of animal behavior and entomology, producing important contributions that anticipated experimental psychology to various extents. He published 71 papers, including 3 in Science, and made fundamental discoveries on animal behavior.

Turner's scientific contributions

Summarizing here Turner's scientific contributions is difficult given the extent and diversity of his numerous works for an extensive review, see¹. He addressed topics such as comparative neuroanatomy in both vertebrates and invertebrates, arthropod taxonomy, insect behavior – with a particular focus on insect navigation –, insect learning, spider behavior, audition in moths, leaf morphology in grapevines, and even civil rights. His neuroanatomical accounts of the avian^{3,4} and invertebrate brain⁵ emphasized his evolutionary views, for he was a fervent admirer of Darwin and Romanes, to the point that he named one of his sons Darwin Romanes Turner. In his numerous research works, he combined both laboratory work and field observations. While describing himself as a “*staunch advocate of laboratory work*”, he argued that ignoring the spontaneous behavior of animals in their natural environments hinders rather than helps the solution of the problems of animal behavior⁶. A leading idea in many of his works was that animals do not behave purely based on taxes or tropisms but that they exhibit “intelligent behavior”, which he tried to analyze using different species and experimental paradigms for studying problem solving e.g.⁷. In this way, he pioneered (without being necessarily credited for that) cognitive views on animal behavior, which emerged in a more structured way many years later⁸. This position was particularly expressed in his multiple works on insect homing and navigation see review in⁹, in which he provided accurate descriptions and analyses of the behavior exhibited by bees, ants, wasps and caterpillars¹⁰⁻¹⁴. In these works, he proposed that memory was a fundamental property of the navigation strategies employed by these animals and formulated his conclusions in a way that anticipated by several decades the cognitive perspectives adopted at the end of the nineties to characterize insect behavior¹⁵. He concluded, for instance, that “*ants are much more than mere reflex machines; they are self-acting creatures*

guided by memories of past individual (ontogenetic) experience”¹⁰.

These achievements contrast with the treatment he received from academic institutions, which at that time denied him a faculty position based on racial issues that impregnated all levels of the society in which he had to live^{1,2}. Precisely, his works are particularly remarkable because they were done in such adverse conditions: Turner had no access to institutional laboratory resources or libraries, no undergraduate or graduate students, and performed most of his work from the disadvantaged position (compared to scientists established in academic institutions) of a high school teacher.

Conclusion: a time for change

Society is facing a period of change in which social injustice and racism are no longer acceptable for vast segments of the population. The fact that this positive and historical turning point reaches academia can only be welcome.

Change in academia implies recognizing the merits of scientists that have been ignored, oppressed and forgotten. It also implies recognizing that injustices are still present in the way some scientific institutions are structured and adopting a clear position against them. Our role as scientists is not only to evaluate objectively the quality of a scientific work but also to be conscious about the social conditions in which it has been produced. The decision about how to change these conditions to promote social and scientific equality is a personal one. What the current times are telling us is that there is no time for indifference.

Reconsideration of Turner's work allows appreciating forgotten merits such as his analyses of honeybee foraging behavior from an associative-learning perspective, which can be considered as a precursor of Pavlovian notions. His cognitive perspectives on animal behavior, infrequent at his time and scientific environment dominated by behaviorist views, underline his unicity and talent.

Above all, recognition of C.H. Turner should go beyond the frontiers of his experimental work, as what impresses in him is the dedication devoted to his many investigations in an environment that was definitely adverse for his creativity and productivity as a scientist, to put it in mild terms. Turner's times were times in which eugenic theories were used to justify white supremacy, leading to sterilization of many African American women during medical procedures without consent¹⁶. The fundamental question that will remain unanswered is which accomplishments had he achieved if he had been

given the same opportunities that white scientists had in his time. The same question should be raised today when evaluating the possibilities of minorities in academia and, more generally in the society.

Turner's vindication should go beyond a specific research or findings: he should be an inspiration for scientists fighting against different types of social adversity and prejudices. Initiatives such as the Charles Henry Turner Award of the Animal Behavior Society, which supports the traveling to society meetings of groups traditionally under-represented in sciences, constitute a valuable step but remains modest compared to the historical reparation that is still necessary. Perhaps the International Society of Neuroethology could follow a similar example, adding to this important move.

The movement "Black Live Matters" is a unique opportunity to achieve reparation, recognize and reward 'invisible' black scientists, and through this, identify existing biases in academia for which urgent changes are needed.

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INCLUSION AND DIVERSITY COMMITTEE IS RECRUITING MEMBERS!

The ISN Inclusion and Diversity Committee (IDC) seeks to add two new early-career members starting in November 2020. The IDC works to create a professional society that is supportive of members from all backgrounds by pursuing initiatives that support underrepresented groups, and by creating an inclusive, accessible environment at the International Congresses of Neuroethology.

Applicants (ISN early-career members) should submit a brief 1-page statement of interest outlining their experience with Diversity, Equity, and Inclusion service, and the ideas, events, and perspectives they plan to contribute. The IDC seeks diverse members who represent different backgrounds and perspectives across the world. Thus, we ask that applicants describe particular elements of their background and/or identity that will contribute uniquely to the composition of the IDC. Applicants should also identify their career stage and affiliation, as we welcome participation from members of the community across all stages of training, and in all career paths. In addition, applicants must be members of ISN and have attended at least one International Congress of Neuroethology in the past. These items should also be mentioned in the application statement.

The IDC is a new initiative of the ISN that aims to promote diversity within the membership as well as the safety and inclusion of all individuals at ISN meetings. The IDC membership currently consists of Heather Eisthen, Lauren O'Connell, and Ana Silva (chair). We welcome you to join us to help the IDC accomplish its mission.

Please submit your application by **October 10, 2020** to **Ana Silva** (asilva@fcien.edu.uy). Questions may also be directed to this email address.

