

19 May 2021

## MEDIA RELEASE

### The dark side of the hive

PRETORIA – Most people have a perception that beehives and colonies are perfectly built, and that they are places of industrious labour for the greater good of the colony and a workforce working for the common good.

Professor Robin Crewe, Senior Research Fellow at the Centre for the Advancement of Scholarship and of the Faculty of Natural and Agricultural Sciences, at the University of Pretoria, is a co-author of the book, *The Dark side of the hive*. It uncovers the “dark” side of bees. He finds that there are lazy bees, sloppy builders, bees who are thieves, stupid bees and assassins too.

The book takes readers in great detail from the earliest origins of bees and how they evolved right through to the present day and some of the challenges they face.

According to Prof Crewe, “What may look obvious from one perspective may actually not be the case. What seems plausible at first sight may turn out to be completely wrong when reconsidered. We should remember the long misconception of a honeybee king ruling the colony formalised by Aristotle in 350 BCE because he considered the sting to be a sign of the male sex and the stingless drones to be the females. For more than 1 800 years, it was common sense to have a king in the honeybee colony because who else could rule such a large community?”

He said only after the work of Luis Mendez de Torres in 1586 and propagated in English by Charles Butler in 1609 did it become clear that the king was rather busy laying eggs and hence might be a female. This was finally confirmed in 1670 when Jan Swammerdam showed that the queen actually had ovaries and was the only fertile female in the colony. “These misconceptions were just the first steps in helping us understand honeybee biology today.”

He explained, “In this book, we do not argue that we are the only ones to have found the biological truth, but we attempt to draw an up-to-date picture of what individuals in a honeybee colony do to get by in their lives. In fact, sometimes it is easier to comprehend social behaviour in animal systems if we borrow terms from our own social structures. Despite all the profound differences, social systems of bees and humans often follow similar rules for problem-solving, yet those in bees stem from natural selection, whereas those of human societies primarily originate from cultural evolution. Although some mechanisms may be similar, others will be completely different, and any comparisons are only helpful if they facilitate comprehension in either system.”

The study was crucial because so many studies on honeybees focus on the queen. “She is unique among the females, but we also tried to study the males because so little research has been done on them. Most students of honeybees focus on the female sex and see no need to study the lazy drones. And, yes, this is a gender issue in its truest sense because drones are anything but lazy, and the single-chromosome males often die without mating. Colonies themselves invest so much into their females that it compromises most of the individuals in the colony and males are only produced when there are excess resources for colony growth,” said Prof Crewe.

His own interest in bees comes from a fascination with deciphering chemical communication systems that are highly developed in honeybees. The queen regulates much of the behaviour in the colony via the chemical signals that she produces and documenting this communication system has led to a better understanding of the management of colonies for agricultural purposes.

“It is crucial for us to understand bees, and in particular honeybees, because our fate as humans and their fate as bees are inextricably intertwined,” said Prof Crewe.

The story was first published on the Research Matters site: [https://www.up.ac.za/research-matters/news/post\\_2973423-the-dark-side-of-the-hive](https://www.up.ac.za/research-matters/news/post_2973423-the-dark-side-of-the-hive). See more on Prof Crewe at: [https://www.up.ac.za/research-matters/news/post\\_2973375-researcher-profile-professor-robin-crewe](https://www.up.ac.za/research-matters/news/post_2973375-researcher-profile-professor-robin-crewe)

### **Media enquiries**

For interviews with Prof Robin Crewe, please email Prim Gower at [Primarashni.Gower@up.ac.za](mailto:Primarashni.Gower@up.ac.za) or call 083 229 9011.

---

## **ABOUT THE UNIVERSITY OF PRETORIA**

The University of Pretoria (UP) is one of the largest contact and residential universities in South Africa, with its administration offices located on the Hatfield Campus, Pretoria. This 113-year-old institution is also the largest producer of research in South Africa.

Spread over seven campuses, it has nine faculties and a business school, the Gordon Institute of Business Science (GIBS). It is the only university in the country that has a Faculty of Veterinary Science which is ranked top in Africa, and overall has 120 academic departments, as well as 92 centres and institutes, accommodating more than 55 000 students and offering about 1 100 study programmes.

UP is one of the top five universities in South Africa, according to the 2019-2020 rankings by the Center for World University Rankings. It is also ranked among the top 100 universities worldwide in three fields of study (veterinary science, theology and law), and among the top 1% in eight fields of study (agricultural sciences, clinical medicine, engineering, environment/ecology, immunology, microbiology, plant and animal sciences and social sciences).

In May 2020, the annual UK Financial Times Executive Education Rankings once again ranked GIBS as the top South African and African business school. The University also has an extensive community engagement programme with approximately 33 000 students involved in community upliftment. Furthermore, UP is building considerable capacities and strengths for the Fourth Industrial Revolution by preparing students for the world beyond university and offering work-readiness and entrepreneurship training to its students.

As one of South Africa’s research-intensive universities, UP launched the Future Africa Campus in March 2019 as a hub for inter- and transdisciplinary research networks within UP and the global research community to maximise 4IR innovation and address the challenges and stresses our continent and world is facing. In addition UP also launched the Javett Art Centre in September 2019 as a driver of transdisciplinary research development between the Humanities and other faculties. In November 2020 UP launched Engineering 4.0. as a hub not only for Smart Cities and Transport, but also to link the vast resources in technology and data sciences to other faculties via Future Africa. These initiatives are stimulating new thinking at the frontier of ‘science for transformation’.

For more information, go to [www.up.ac.za](http://www.up.ac.za)