Five Alarm Bio starts research collaboration with University of Bath on cognition model

Cambridge, UK, May 2024: Five Alarm Bio Ltd is pleased to announce the initiation of a collaboration with Dr David Gurevich and Dr Nicholas Nikolaou in the Department of Life Sciences at the University of Bath on modelling cognitive decline in Zebrafish.

Cognitive decline is one of the most devastating disabilities of older people, with almost 1 million people having a diagnosis of dementia in the UK alone, costing our society an estimated £35 billion a year. Finding new approaches to these health- and life-limiting conditions is a major focus of current biomedical research, and one of our goals. At Five Alarm Bio we are exploring new ways to slow or prevent damage accumulation in cells as we age, to create new, safe, drugs for the diseases of older people including cognitive decline and dementia.

To work on this cognition programme we are delighted to announce a research collaboration with Dr David Gurevich and Dr Nicholas Nikolaou of the University of Bath.

The Nikolaou group uses zebrafish as a genetic model system and a range of molecular genetics, imaging, and behavioural techniques to investigate mechanisms that regulate how neurons in the brain establish connections with other neurons, forming functional neural circuits that coordinate bodily functions, sensations, and perceptions of the world. Some of the molecules involved in neuronal connectivity have direct involvement in neurological conditions, such as neurodevelopmental disorders and neurodegeneration. This work could also lead to better understanding and treatment of conditions such as epilepsy and motor neuron disease.

The Gurevich lab focuses on modelling a range of diseases using the zebrafish, with a particular emphasis on diseases of defective and failed tissue repair such as chronic wounds in diabetes. Using a combination of cloning, transgenesis, CRISPR-Cas9 mutagenesis, transcriptomic/proteomic profiling and bioinformatics, flow cytometry, tissue culture and advanced confocal microscopy, we study how cells communicate and interact with each other during repair processes, how these interactions go awry in various diseases, and how they might be rescued.

Initial work done by Drs Gurevich and Nikolaou have shown that the zebrafish is an unexpectedly valuable model for investigating normal and aberrant cognition, and therefore a tool for rapidly screening new compounds for their potential to reduce or even prevent cognitive decline. Our collaboration will test Five Alarm Bio's compounds in this model as a 'Proof of Concept' for using these fish to test for cognitive effects.

"This is a really exciting collaboration for us" said Five Alarm Bio CSO Dr William Bains. "The standard models for testing a compound's ability to reduce or prevent cognitive decline are very slow and expensive. This collaboration paves the way for a much faster effective screening method, allowing us to test more compounds and find the best to take forward to treat these terrible diseases."

Dr Nikolaou said "These fish have essentially all the same neural structures as humans and share over 70% of the same genes with us, and they are translucent, so we can record the activity of every single neuron in the brain and build neural network maps. This makes using the zebrafish a really powerful model of cognitive diseases, given that neural network dysfunctions manifest as motor impairments or behavioural changes. Ultimately, this means that recording of the swimming activity of larvae will provide further insights into the effectiveness of compounds tested, as well as affording the opportunity to dissect the specific neurons involved in cognitive decline. Our expertise in using an automated behavioural monitoring platform enables us to both establish a baseline for normal cognition, as well as how this is impacted by treatment with interventions known to cause cognitive dysfunction. Applying this technology to Five Alarm Bio's new compounds is an exciting test of this approach."

"This is a really exciting opportunity for us" said Five Alarm Bio CEO Dr Janette Thomas. "It is an important programme for our research, and ultimately for patients and society, in one of the biggest areas of unmet medical need."

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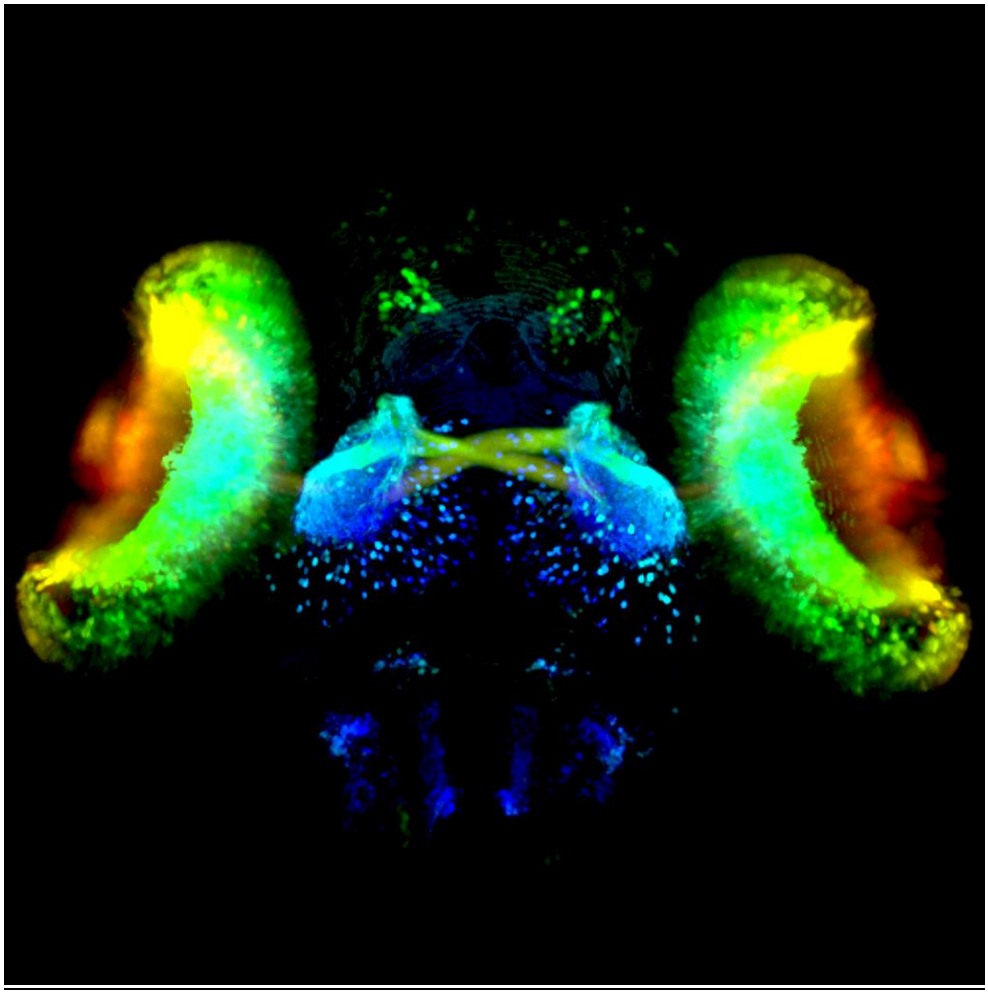
About Five Alarm Bio Ltd.

Five Alarm Bio is a drug discovery company deploying new understanding of the chemical damage associated with aging to discover treatments for serious illness. Our novel approach leverages well-known, inherently safe biology with broad potential therapeutic application. Our small molecules promise to be potential treatments for a range of diseases and disabilities afflicting older people. For more information, please visit www.fivealarmbio.com

About the University of Bath / Life Sciences

The University of Bath is one of the UK's leading research and teaching Universities, coming eighth in The Times Good University Guide in 2024. Based in the historic city of Bath in the South West of England, the University of Bath has a strong history of research that links with industry, with many of our 20,470 students sharing their courses with industry collaborations of placements. Bath attracted £193M in research funding in 2023, and 92% of that research was rated a world-leading or internationally excellent in the 2021 REF.

Additional Material



Graphic. The eyes (in green and orange) and brain (in blue) of a living zebrafish, imaged through the top of its head in fluorescence using genetically engineered fish. The nervous system of Zebrafish can be seen in newly hatched fish because the fish are transparent, making them uniquely well suited to studies of how the nervous system functions and how disease affects it. Picture © Nicholas Nikolaou 2024

References:

Dementia incidence: https://www.alzheimersresearchuk.org/dementia-information/quick-guide-dementia/

Cost of dementia: https://www.gov.uk/government/publications/dementia-applying-all-our-health/dementia-applying-all-our-health

Bath University rankings: https://www.bath.ac.uk/announcements/times-good-university-guide-2024-names-bath-the-best-in-the-south-west/