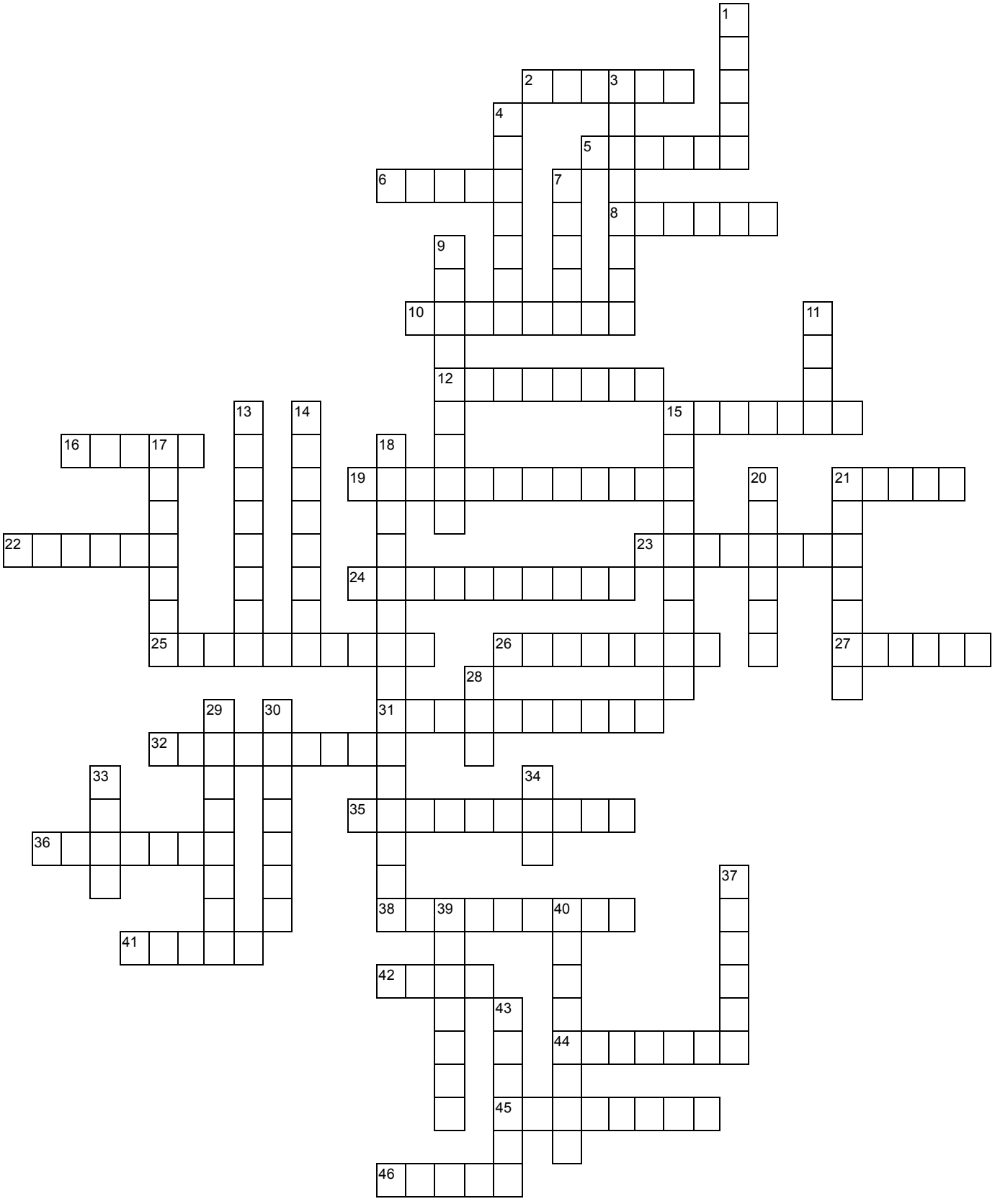
# Know your researchers

Determine the Waterloo Faculty of Science researcher described in each clue (answer will be their last name).

**HINT:** If you need help, check our researchers' profiles on the departmental web pages! There are professors from each of Science's departments and schools included in this puzzle.



## Across

2 A leader in the field of sports vision and concussion rehabilitation, from sports related brain injuries to paralympic classification

5 Researches coastline erosion, management of shoreline changes, and response and recovery of costal barriers from storms

6 Uses trapped ion quantum simulations to investigate multilevel quantum information coding in qudits

8 Conducts contaminant hydrology and groundwater geochemistry remediation studies, focused on groundwater transport

10 Focuses on the design of reagents for the controlled assembly of polynuclear metal clusters

12 Examines how the physiology of children or patients with disease affects the pharmacokinetics of drugs and uses this information to optimize drug therapy

15 Uses ultrafast electron diffraction and imaging to study molecular structure and dynamics

16 Works on quantum optics to research photon entanglement, with a focus on generating new quantum states of light

19 Considers the ecohydrology and biogeochemical processes that control water quality, from nutrient cycling and geomicrobial activity to contaminant tracing

21 Uses machine learning algorithms for simulating quantum mechanical systems on classical computers

22 Studies the speciation, taxonomy and evolution of sexuality on Bangiales, an order of red algae

23 Examines molecular mechanisms for protein folding, function and aggregation for biomedical and biotechnology applications

24 Investigates how environmental stress influences the health and immune systems of amphibians to understand their worldwide decline

25 Award winning researcher using ultrashort laser pulse generation using multi-frequency Raman generation

26 Improving medication use through emerging technology design in healthcare

27 Examines how human-caused and natural ecological disturbances influence wetland communities

31 Uses geomicrobiology to address carbon storage, bioremediation of mine sites, and understand microbial activity in polar habitats

32 Understanding how human activities and climate change alter carbon cycles and greenhouse gas budgets

35 Develops tools for water resource management, studying the use of hydrological models to balance competing water demands

36 Develops theoretical tools for investigating light-matter interactions with applications in quantum communications and quantum simulations

38 Aims to understand the evolution of the Earth's continental crust and mountain formation through plate tectonics and isotope dating

41 A leader in developing new energy storage materials for batteries

## Down

1 Uses multinuclear, gas phase, high-resolution and solid-state NMR to probe the physical chemistry of a variety of compounds

3 Studying visual cortex development and plasticity for patients with brain-based visual disorders, and is co-leading the development of Waterloo's Advanced MRI and Neuromodulation Core Facility

4 Studies the effects of climate change and land use, water resource availability, and the origin of fluids in the earth's crust

7 Studies the impact of climate change and pollutants on fish epigenetics

9 Studies the fundamental physics of black holes, from observable signatures and polarization to their gamma-ray emissions

11 Investigates exotic quantum properties in low-dimensional materials for new devices

13 Investigates cosmology, gravitation and observational astrophysics to address fundamental questions about dark energy and gravity

14 Aims to improve diagnosis and treatment for neuroinflammatory illnesses like Alzheimer’s and Parkinson’s disease using quantum neurobiology

15 Studies high intensity femtosecond laser pulses to image molecules in motion

17 Studies pathogen surveillance using genomic methods, upcycling of food waste to biodegradable bioplastics, and plant beneficial bacteria

18 Uses computational molecular modeling and wet lab validation for synthetic biology and drug discovery

20 Focuses on elucidating molecular mechanisms of disease-causing proteins in neurodegeneration for Huntington disease and ALS

21 Using birds and bats, investigates how animals cope with energetic challenges, and the environmental conditions that drive these challenges

28 Develops tools for environmental remediation of municipal landfills by identifying the microbial diversity and function at sites

29 Creates geometrically complex inorganic nanoparticles for catalysis and quantum optics

30 Examines the role of conformational plasticity on enzyme structure, mechanism, inhibition and allostery

33 Reconstructs recent glaciers to understand the modification of the Earth's surface

34 Designs bio-nano-materials using DNA and lipids as functional polymers for sensing and medicine

37 Studies the improvement of pilot performance and advocates for sustainability in the aviation industry

39 Studies geochemistry to trace petroleum systems, mineral deposit formation, and reconstruct the oxygenation of our planet

40 Studies quantum materials and high-temperature superconductors using resonant soft X-ray scattering and absorption spectroscopy

43 Develops hypervalent-iodine halogen-transfer methods for selective fluorination

42 Studies exoplanets and planet formation using data from telescopes including the James Webb Space Telescope

44 Investigates the molecular properties of charged molecules and clusters, and is leading the development of Canada's only free-electron laser

45 Uses the largest scale map of the known universe to study galaxy distribution and the Universe’s evolution

46 Uses bioinformatics and computational biology to predict protein functions, evolutionary adaptations in genes and gemones, and compare functional metagenomics