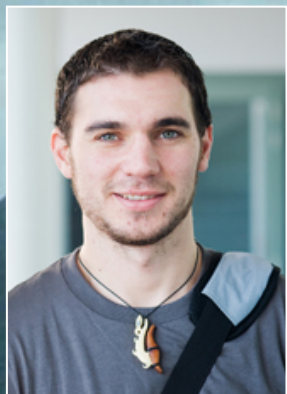


Hemi Cumming

Ngāti Raukawa ki te Tonga, Ngāti Toa, Ngāti Koata



“I like the freedom in science to think creatively and solve problems that could benefit lots of people. You have to be quite determined and persistent.”



Chemist

Studies the structure of molecules that could benefit our health

Hemi, in the front seat, paddles air during the 40km Round Raro waka ama relay race in the Cooks Islands in 2017.



NZASE
New Zealand Association of Science Educators

www.nzase.org.nz/resources/?resource=scientist-profiles

What Hemi studies

Creating a cancer-fighting compound

Hemi created a simplified copy of a natural chemical toxin made by a rare sea sponge, which is known to kill only cancer cells. Unfortunately, the copy wasn't as good at killing cancer cells in the lab as the original toxin, but his results suggested that a sulphur-based chemical that was left out of the copy was important for binding the toxin to the targeted cells.

Improving the process of making microcapsules

Hemi works in a team that is improving technologies for making microcapsules that are the thickness of a human hair (~50 microns). The capsules are “a polymeric shell around a small oil droplet – it's 70 percent oil and the final product is a fine white powder.” The group aims to use capsules to feed fish larvae in marine farms, instead of live sea shrimp.

Using enzymes to make anti-oxidants

Hemi modified caffeic acid, a water-soluble antioxidant found in coffee beans, to make it suitable for oil products. Antioxidants, such as vitamins C and E, stop chemical chain reactions that damage cells, and cause high-value oils to go rancid. Hemi's process allows caffeic acid to dissolve in oil so that it can be used in creams or capsules. Hemi has created antioxidants that are much more effective at protecting oil from going rancid than common oil-soluble anti-oxidants, such as vitamin E.

See his complete profile from April 2020 - Scroll down at <https://nzase.org.nz/resources/?resource=scientist-profiles>