Docket #: S10-112

Measurement and Comparison of Immune Diversity by High-throughput Sequencing

Stanford researchers in the Quake Lab have patented methods to apply DNA sequencing to analyze the variable regions of the antibody heavy chain in order to profile immune diversity in zebrafish. Zebrafish has 5 orders of magnitude fewer antibodies than humans, and thus represents an excellent model system for adaptive immunity. The researchers have performed a comprehensive measurement and analysis of the heavy-chain antibody repertoire of zebrafish. This approach provided insight into the breadth of the expressed antibody repertoire and immunological diversity at the level of an individual organism. By identifying which immune receptor sequences or groups of sequences are most characteristic of specific clinical conditions, this technology could potentially provide a diagnostic capability.

Applications

- Assess the composition of immune receptor sequence repertoires in an organism.
- Diagnostics for autoimmunity, allergy, or pathogens.

Advantages

- High throughput
- Less time and resources to obtain substantial information from a single sample

Publications

- J.A. Weinstein, N. Jiang, R.A. White III, D.S. Fisher, S.R. Quake, "High-Throughput Sequencing of the Zebrafish Antibody Repertoire", *Science*, 8 May 2009.

Patents

- Published Application: WO2011140433
- Published Application: 20130196861
- Published Application: 20140235478
- Published Application: WO2014121272
- Published Application: 20150292009
- Published Application: 20160333405
- Published Application: 20180127827
- Published Application: 20180363059
- Published Application: 20190024171
- Published Application: 20210002722
- Published Application: 20210054461
- Issued: 9,234,240 (USA)
- Issued: 9,909,180 (USA)
- Issued: 9,290,811 (USA)
- Issued: 10,196,689 (USA)
- Issued: 10,774,383 (USA)
- Issued: 10,774,382 (USA)

Innovators

- Stephen Quake
- Joshua Weinstein
- Ning Jiang
- Daniel Fisher

Licensing Contact

Mona Wan

Senior Licensing Manager for Special Projects

Email