



UCF Center of Excellence for Hypersonic and Space Propulsion

Directed by Dr. Kareem Ahmed, Presented by Dr. Rachel Hytovick

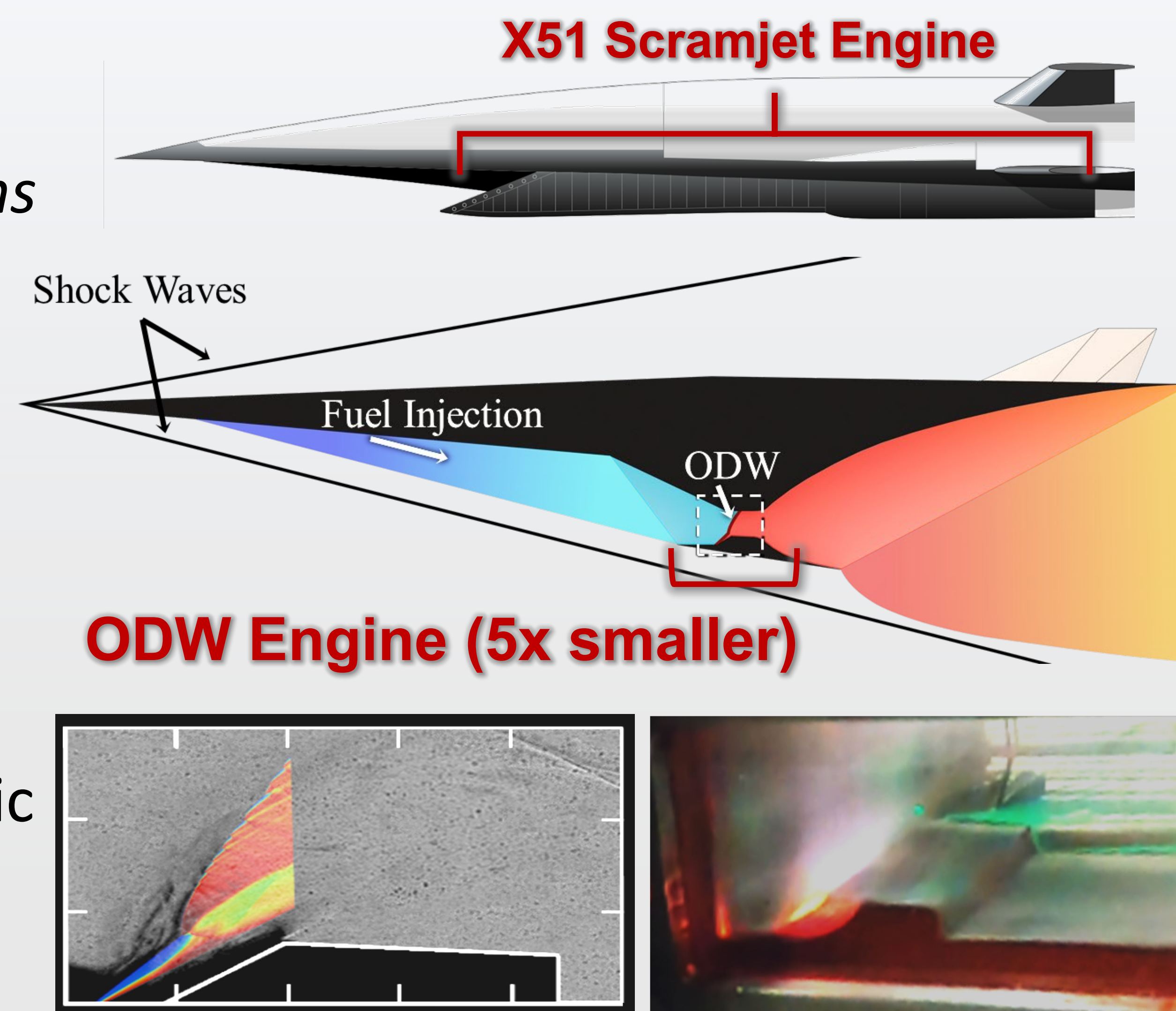


Mach 10 Oblique Detonation (MXOD) Flight Program

A series of flights designed to demonstrate, analyze, and incorporate oblique detonations into a full-scale engine design

Benefits

- Smaller engine (5x)
- Simpler inlet (reduced pressure loss)
- Higher temperature and pressure (2x scramjet specific impulse, 5x rocket)
- Higher Mach (Mach 8-17)



MXOD Flight Series

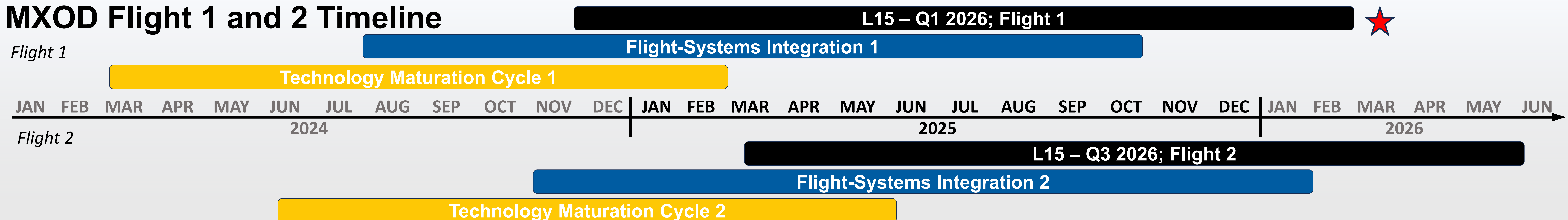
Flight 1-5:

- Demonstrate/quantify oblique detonation fundamentals and establish databases of key physical/chemical phenomena and processes
- Advancing enabling science and technology using detonation-producing experimental articles
- Developing state-of-the-art instrumentation and diagnostics
- Establishing fuel injection penetration and mixing strategies
- Necessary modeling and simulation tools

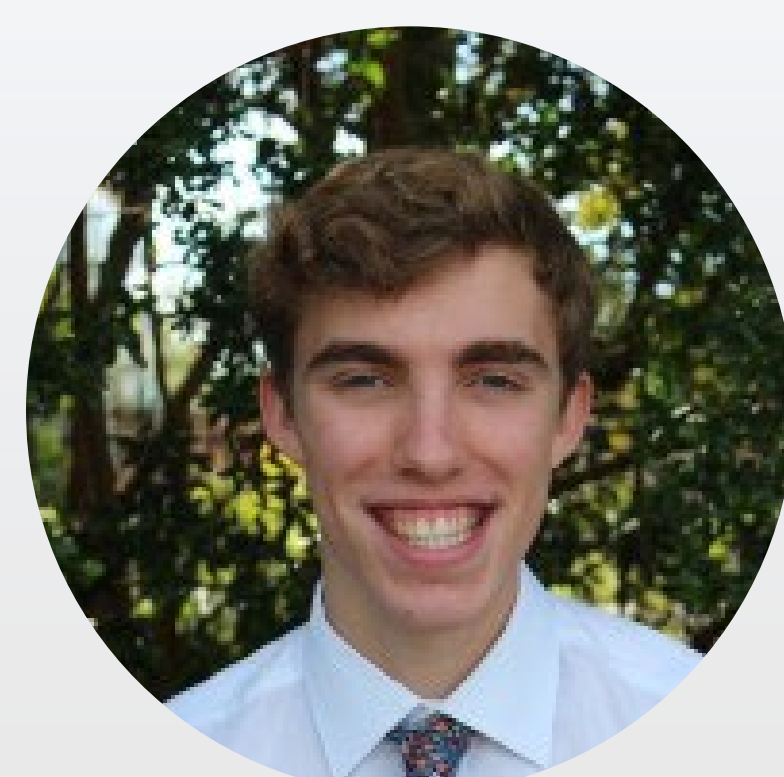
Flight 6-8:

- Explore detonation potentials for space and high-speed propulsion

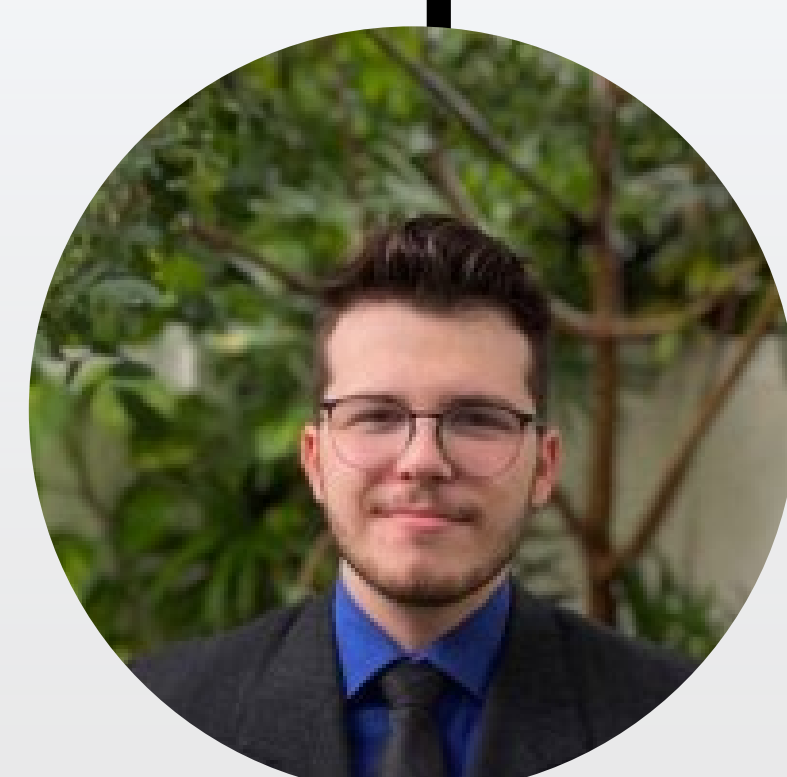
MXOD Flight 1 and 2 Timeline



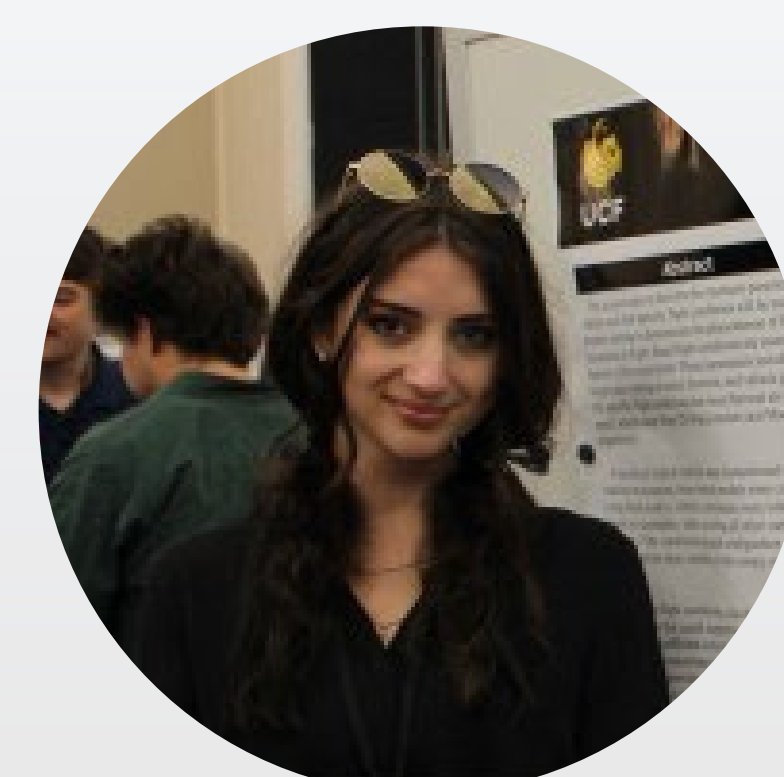
MXOD Leadership Team



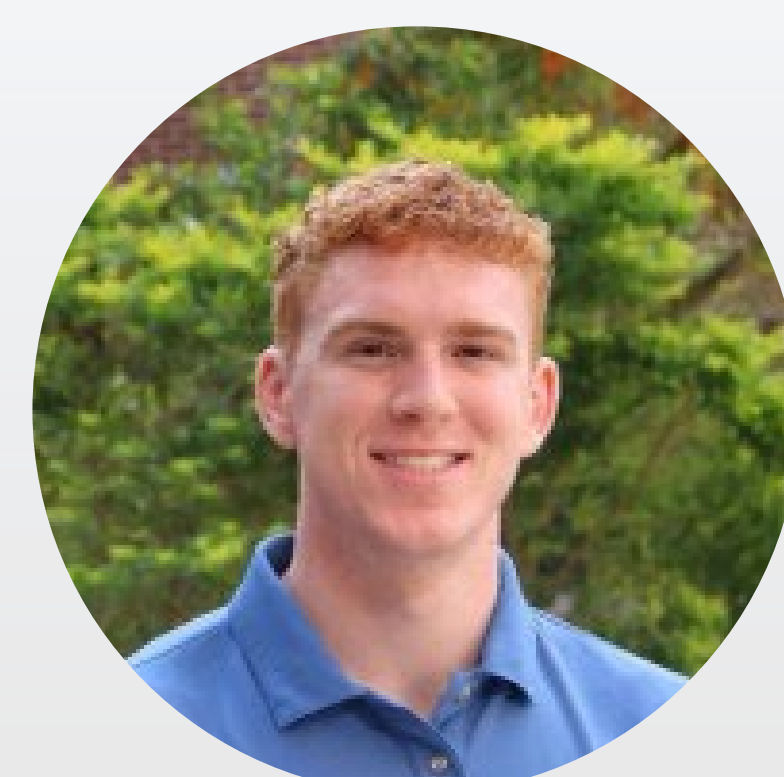
Spencer Smith
Structures



Justin Sprunger
Technology Maturation



Samantha Keene
Integration



Jack Koller
Plumbing & Electronics

UCF COE Research Areas and Team



Dr. Kareem Ahmed
Director



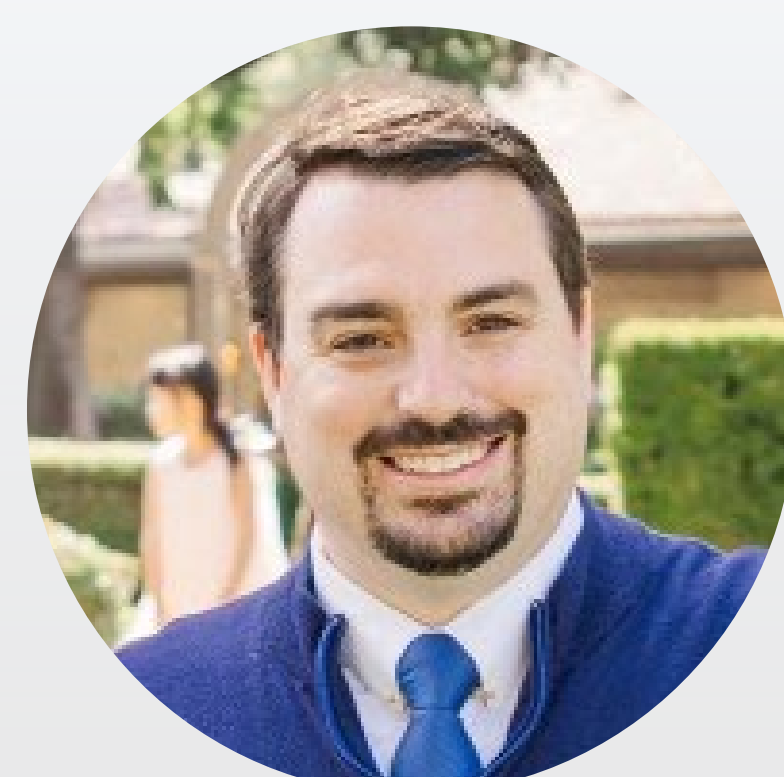
Dr. David Mitchell
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Dr. Patrick Meagher
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