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The cell-cell communication tool box: The synthetic design and implementation of short and long range mammalian cell to cell communication systems.

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This work constructed both long range and short range cell-cell communication "tools" for programmable spatiotemporal patterns in mammalian cells. Repurposing both bacterial and plant components to work together in a mammalian cell context lead to one of, if not the first, mammalian synthetic circuits capable of producing its own diffusible signaling molecule that is entirely orthogonal to the endogenous system. Positive feedback and feedforward regulation controlling downstream components in these systems has led to further design improvements in using these cell-cell communication "tools" to form programable spaciotemporal patterns.

Biography

Katherine Kiwimagi has completed her PhD in Biomedical Engineering at Colorado State University and is currently working on Postdoctoral studies at Massachusetts Institute of Technology in the Department of Bioengineering as part of Ron Weiss group. Her published work is focused on the interplay of *in silico, in vitro* and *in vivo* studies where she has developed both experimental and computational tools with applications in many biological systems. Her current work focuses on cell-cell communication tools for mammalian systems with the application of creating spatio-temporal patterns with the hope of directing organoid differentiation.

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