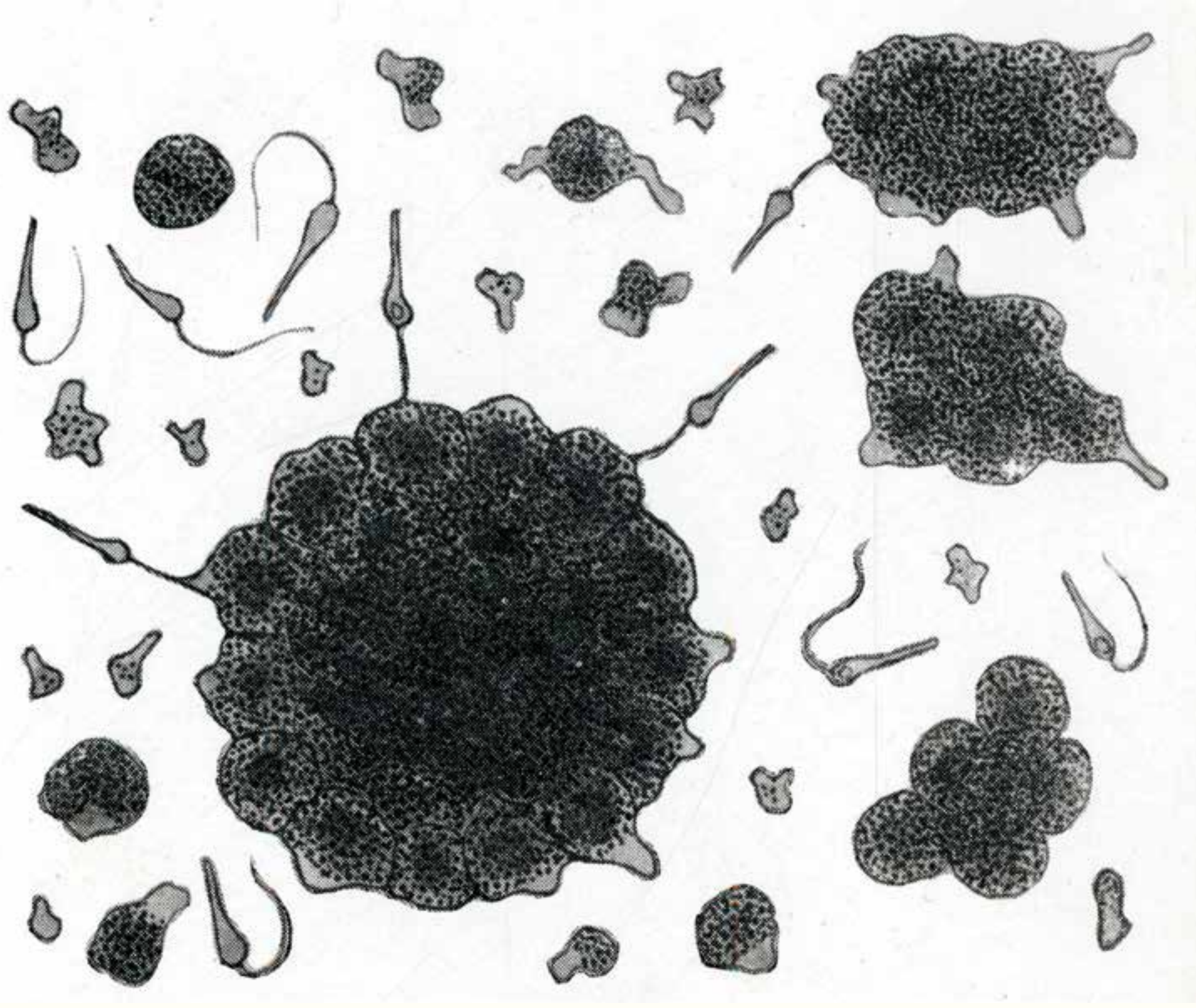


SEEING CELL AGGREGATES

In nature, most cells are parts of interacting living systems or organisms. One way to study cells interacting is by looking at aggregates.

The sponge, while a multicellular organism, is considered an aggregate of individual cells. Around 1900, American Henry van Peters Wilson showed that individual sponge cells can separate and reaggregate to make living sponges again. Generations of MBL researchers have asked how this occurs.

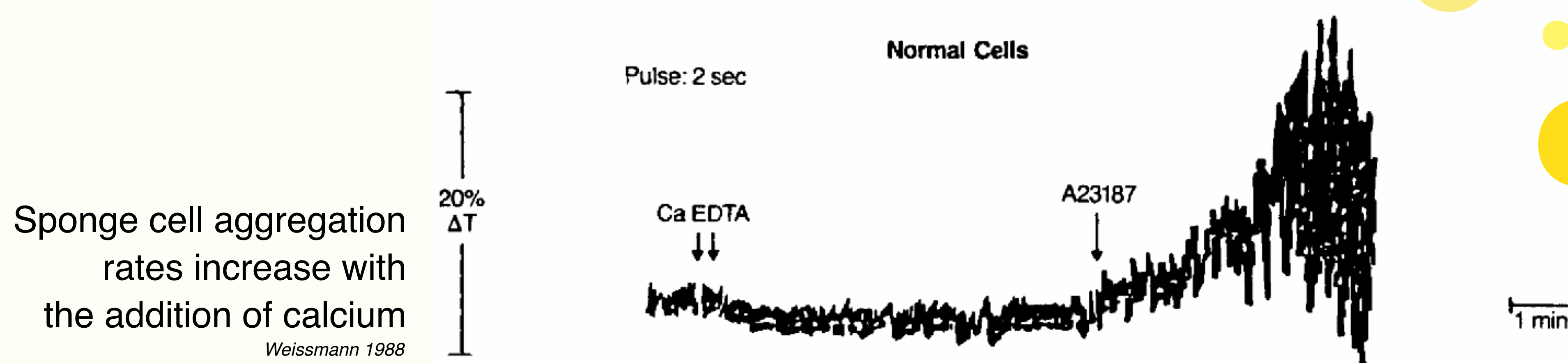


Sponge cells aggregating Wilson 1910



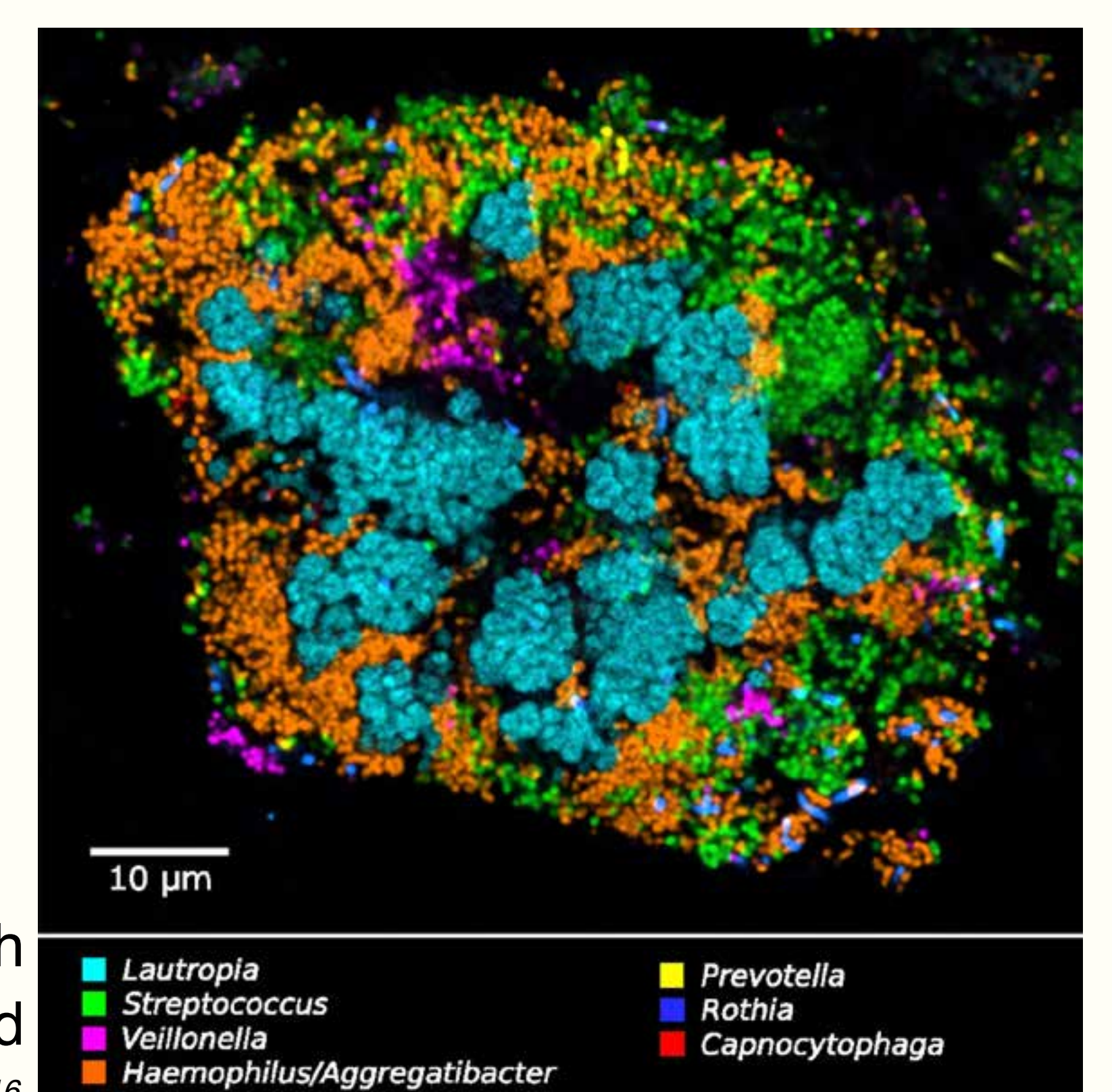
McCallum 2018

In 1988, summer MBL researcher Gerald Weissmann asked what factors stimulate sponge cell aggregation. He put dissociated sponge cells in clear containers and found that more light led to more aggregated sponge cells. Sponge cells also need calcium to group, and other chemicals made them group even more. His work extended to show how calcium and other chemicals work in human cells. This study of aggregations gave insights into the ways that cells interact within a whole.



Seeing groups of cells at the microscopic level is not so straightforward. Researchers invent ways to tell different kinds of cells apart, and ways to interpret interactions. This has caught the attention of MBL researchers on microbial communities in particular.

One strategy to see groups of microorganisms is by making different species of microbes fluoresce specific colors. With the CLASI-FISH technique, MBL researcher Jessica Mark Welch visualizes aggregates of cells in dental plaque and learns about their spatial relationships.



A "cauliflower" aggregate with different bacterial species labeled

Mark Welch 2016

Visualizing cells in different ways, as parts of groups, has inspired further research into how cells communicate and interact. Such beautiful imaging work raises new questions: can we go beyond what we can see in nature to imagine designing cells?