The Complex System of Factors that Influence Cell Motility

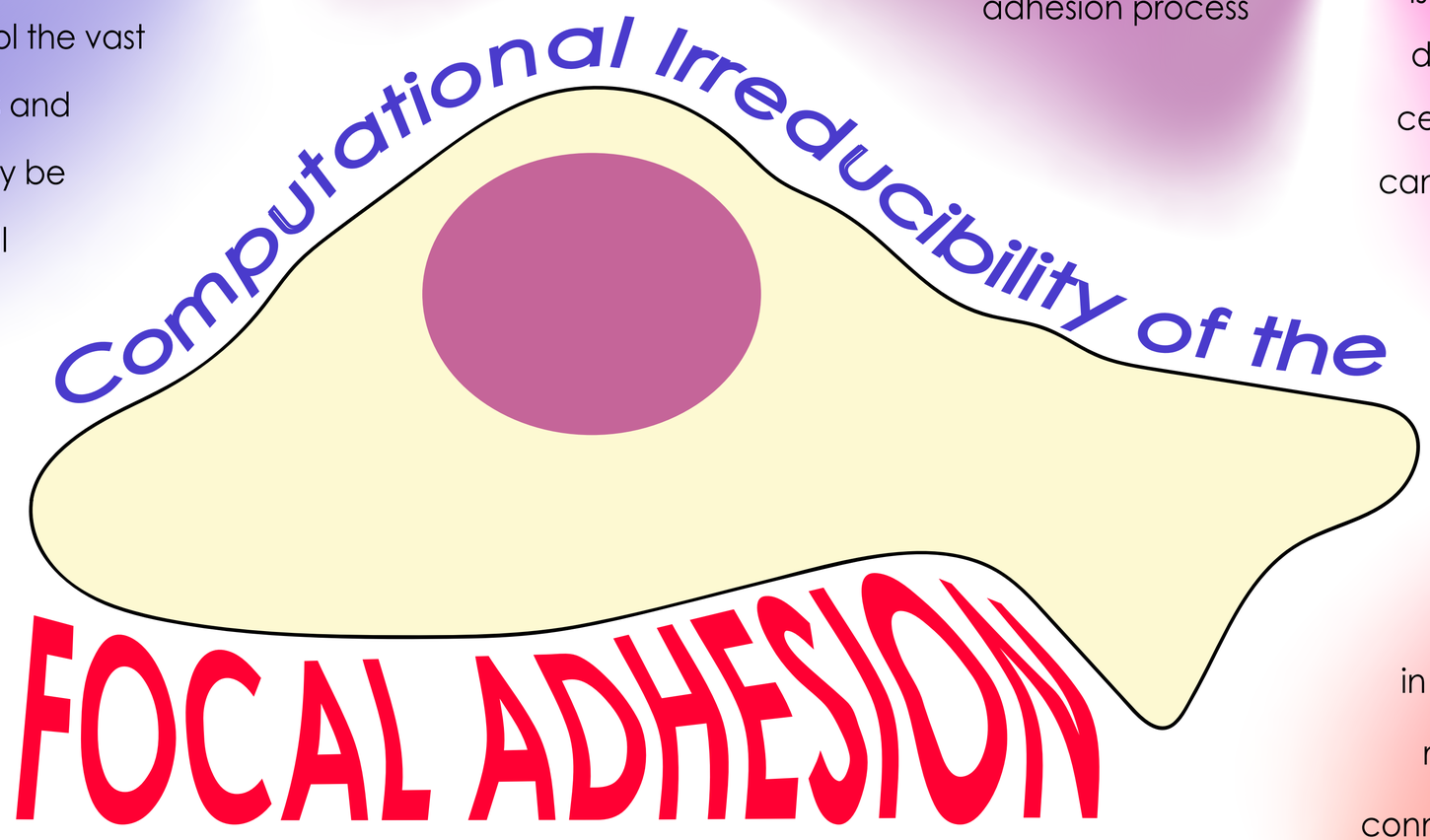
is generally considered too expansive to be fully accounted for, as researchers are currently not equipped to identify or control the vast number of biochemical elements and intracellular mechanisms that may be relevant, depending on each cell

Computational Irreducibility

applies to a system that is too complex to be be described by a single formula, and whose behavior is most readily predicted or approximated by a computer simulation, as is the focal adhesion process

Computational Modeling of Focal Adhesion Dynamics

is approached with a variety of different simulation types, like a cellular automata model, which can simply predict the movement of focal adhesion elements across discrete locations and discrete time instances



Implications of Manipulating Cell Motility

are wide-reaching, and our current understandings allow scientists to more strategically consider organ engineering, mind control, and treatment of many forms of disease

Physically Influencing Focal Adhesions

can be achieved in a lab by allowing a cell to encounter a surface with controlled texture, electric field, or distribution of chemicals -- in a living body, the organism might ingest a drug or endure an electromagnetic pulse that would similarly alter the conditions surrounding a cell

The Focal Adhesion

in a cell is a structure formed by many different proteins, which connect the inside of the cell to its local environment, working together to translate cues from the outside to internal signals that allow the cell to adapt and -- in many cases -- move