



Regulation of Microtubule Stability by a Histone Methyltransferase Subunit

Justin Su

Sophomore, Chemistry Major

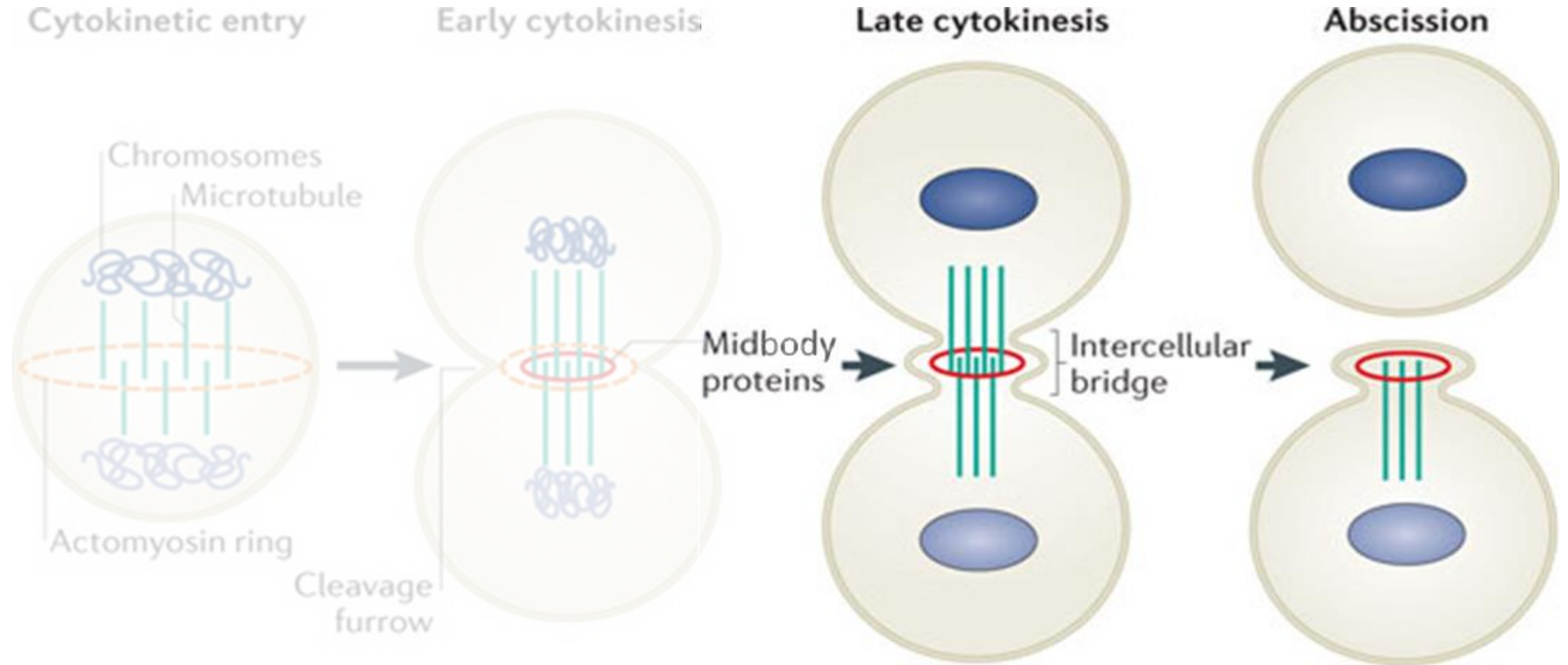
Mentors: Adeel Lakhani & Hayley Nguyen

Faculty Advisor: Dr. Dzwokai Zach Ma

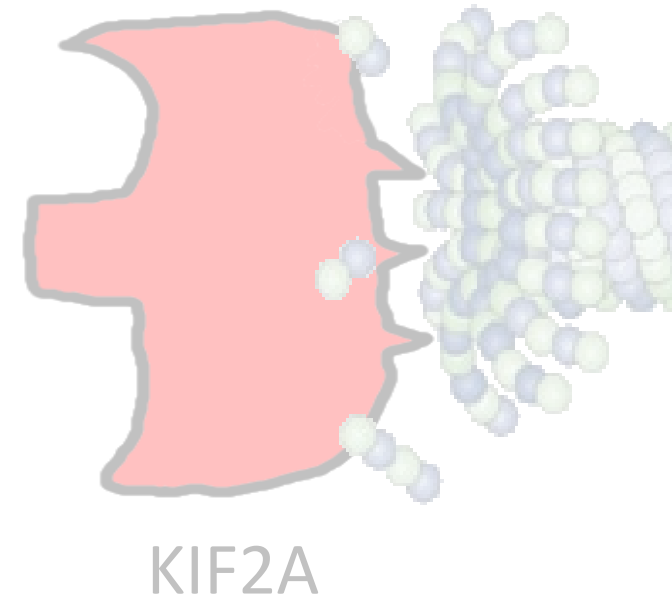
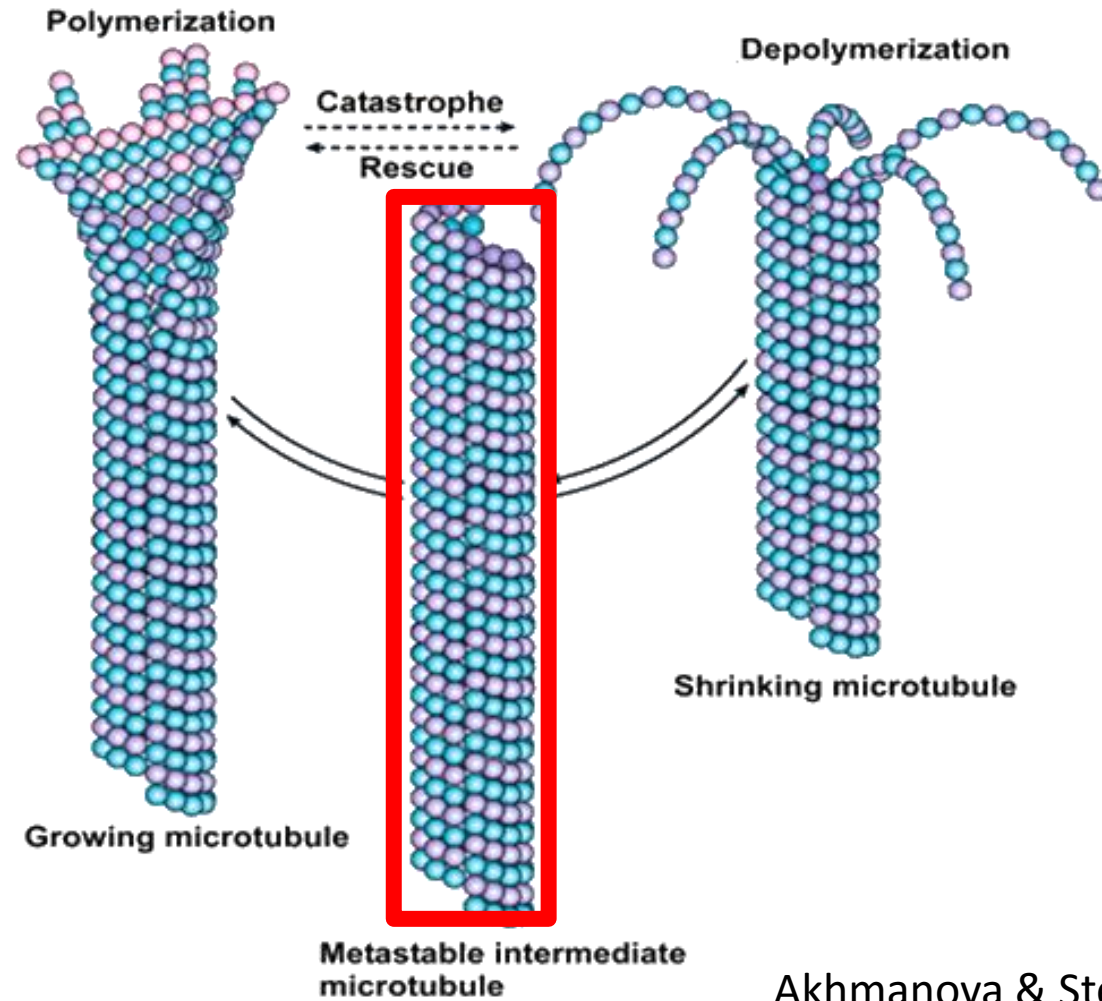
August 8, 2016



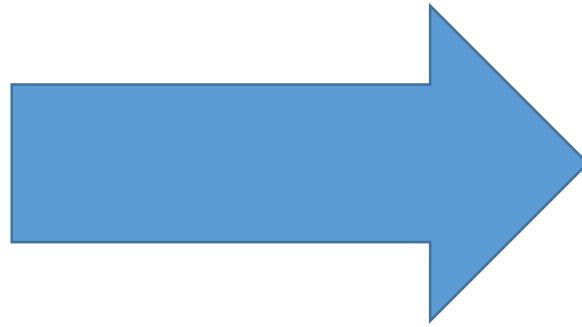
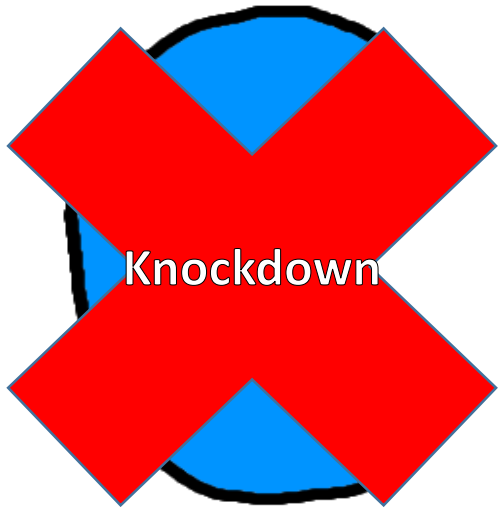
Control over microtubule dynamics is imperative for proper cell division



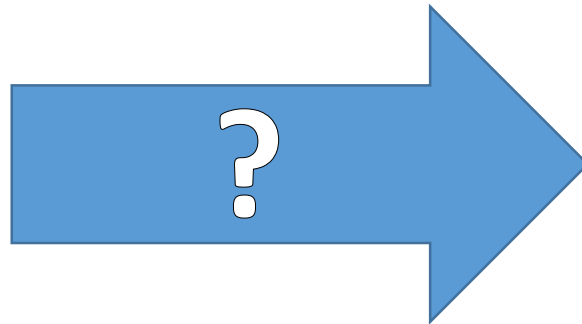
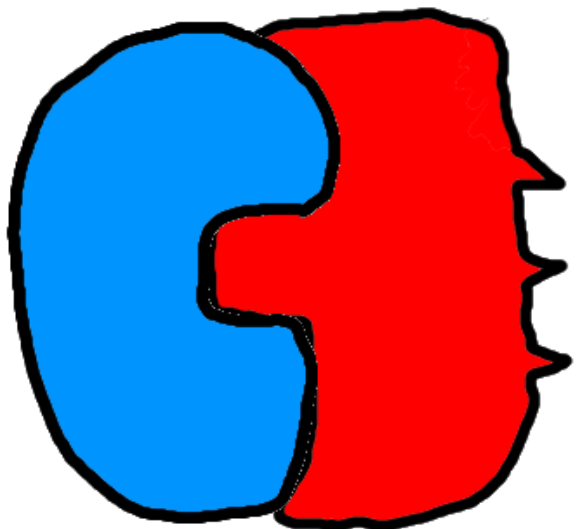
Knockdown of WDR5 increases midbody microtubule stability



Do WDR5 and KIF2A interact to regulate midbody microtubule stability?

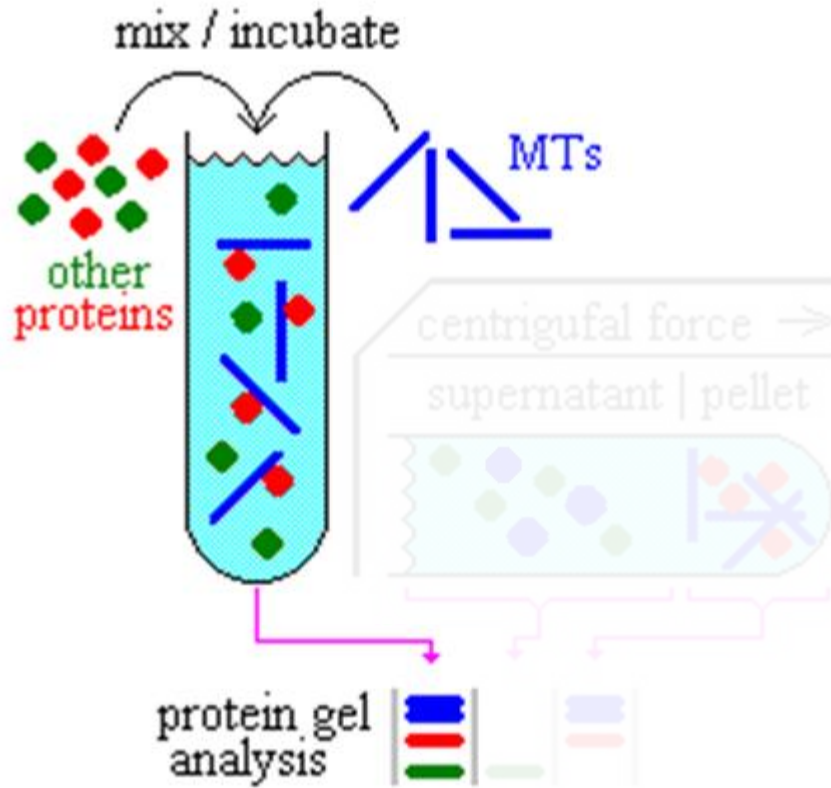


Stabilization

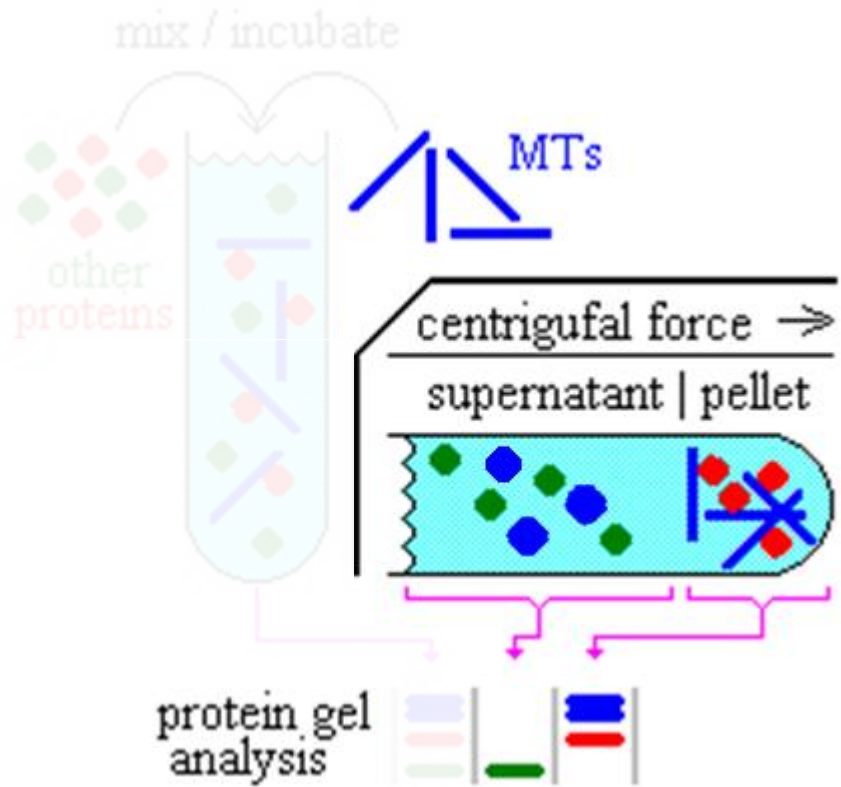


Destabilization?

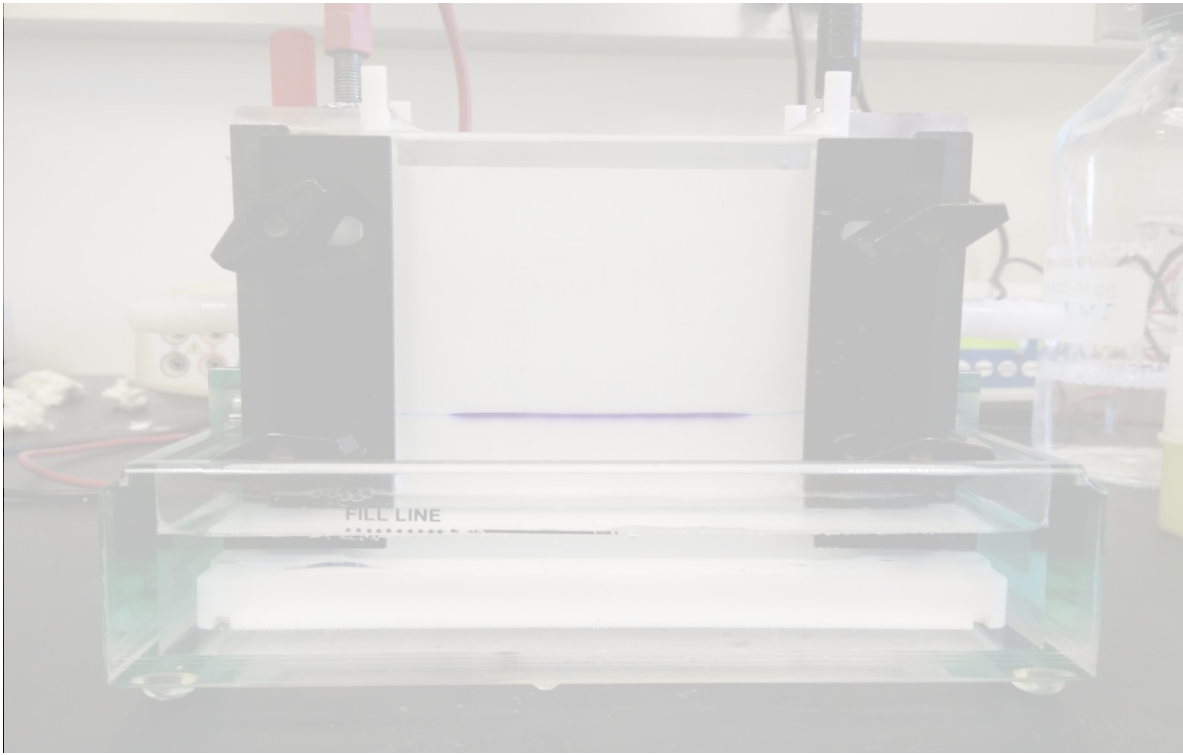
In vitro Microtubule Assay will test if these proteins can affect microtubule stability



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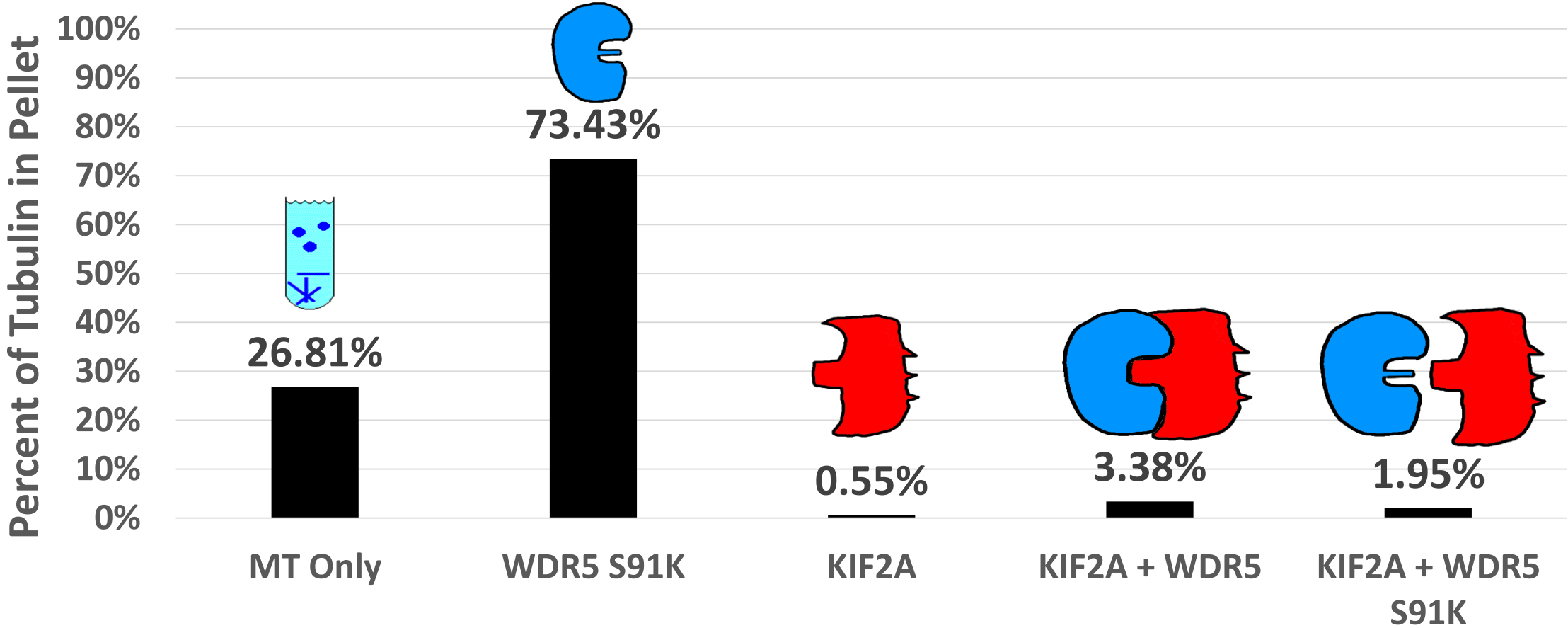
In vitro Microtubule Assay will test if these proteins can affect microtubule stability



Courtesy of Hayley Nguyen

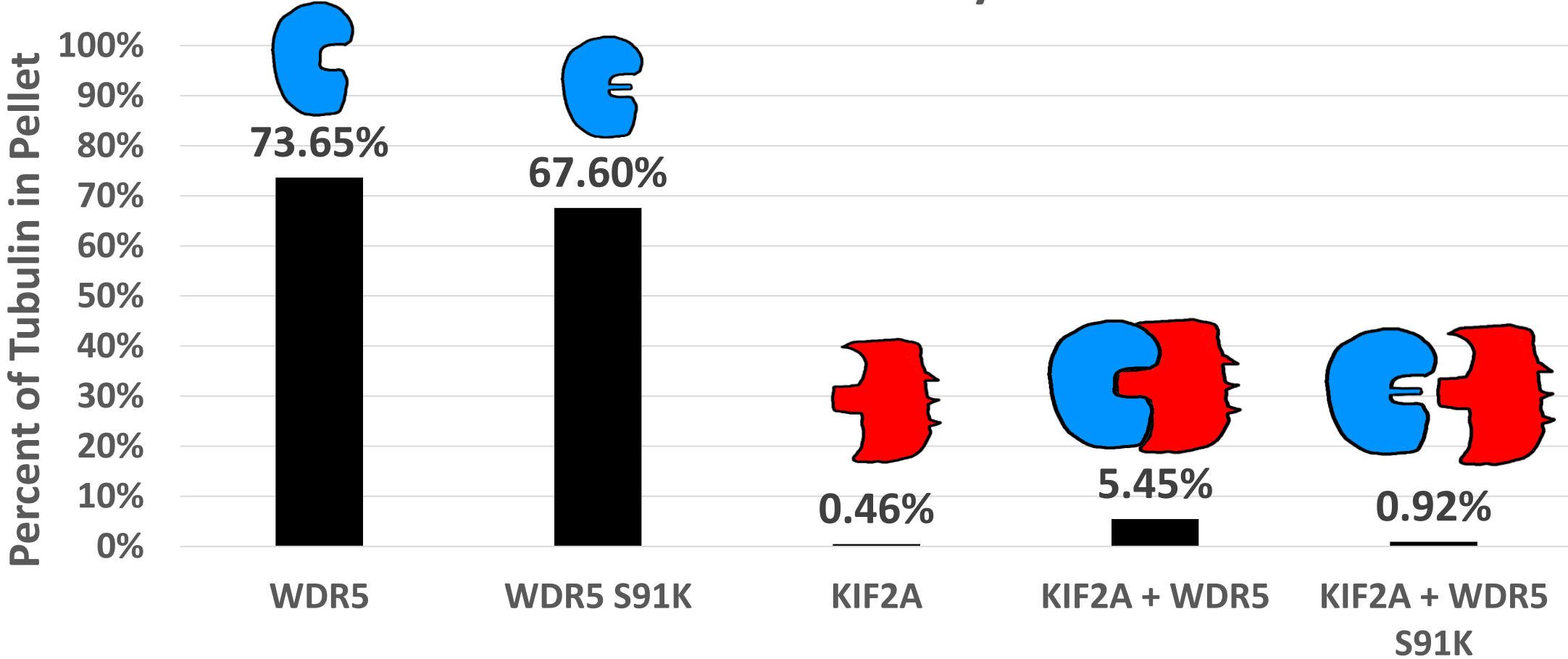
WDR5 appears to *inhibit* KIF2A's ability to depolymerize microtubules by binding to KIF2A

in vitro Microtubule Assay: Trial 1



WDR5 appears to *inhibit* KIF2A's ability to depolymerize microtubules by binding to KIF2A

in vitro Microtubule Assay: Trial 2

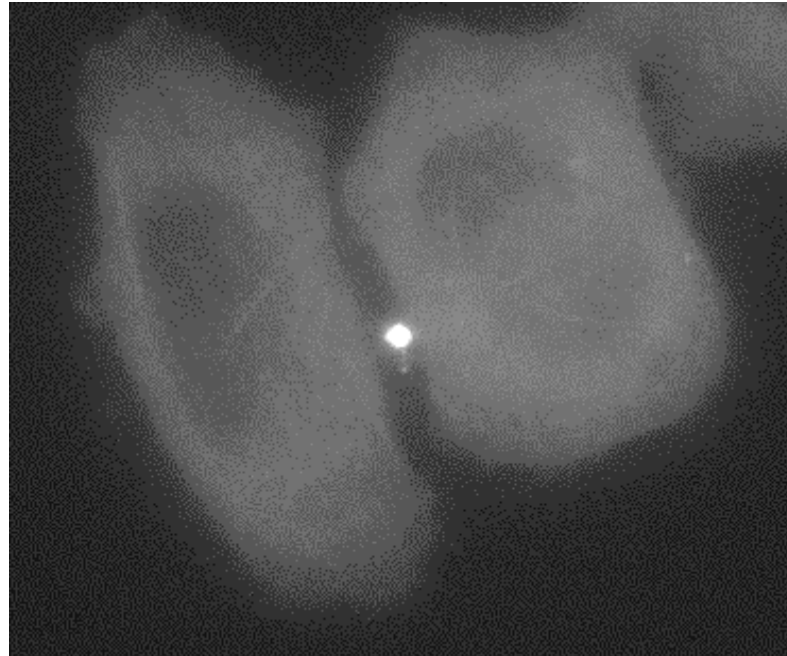


Proteins homologous to KIF2A found localized in the midbody

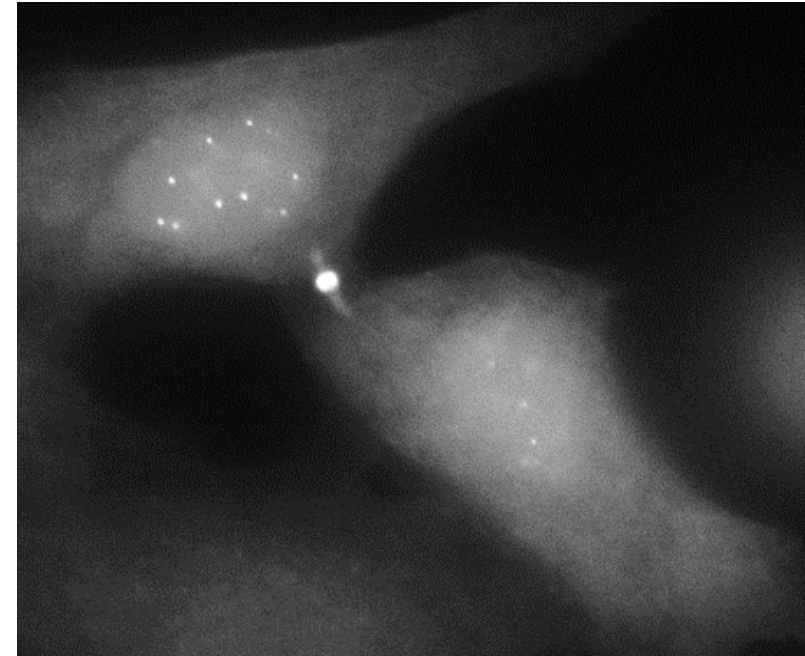
EGFP-KIF2A



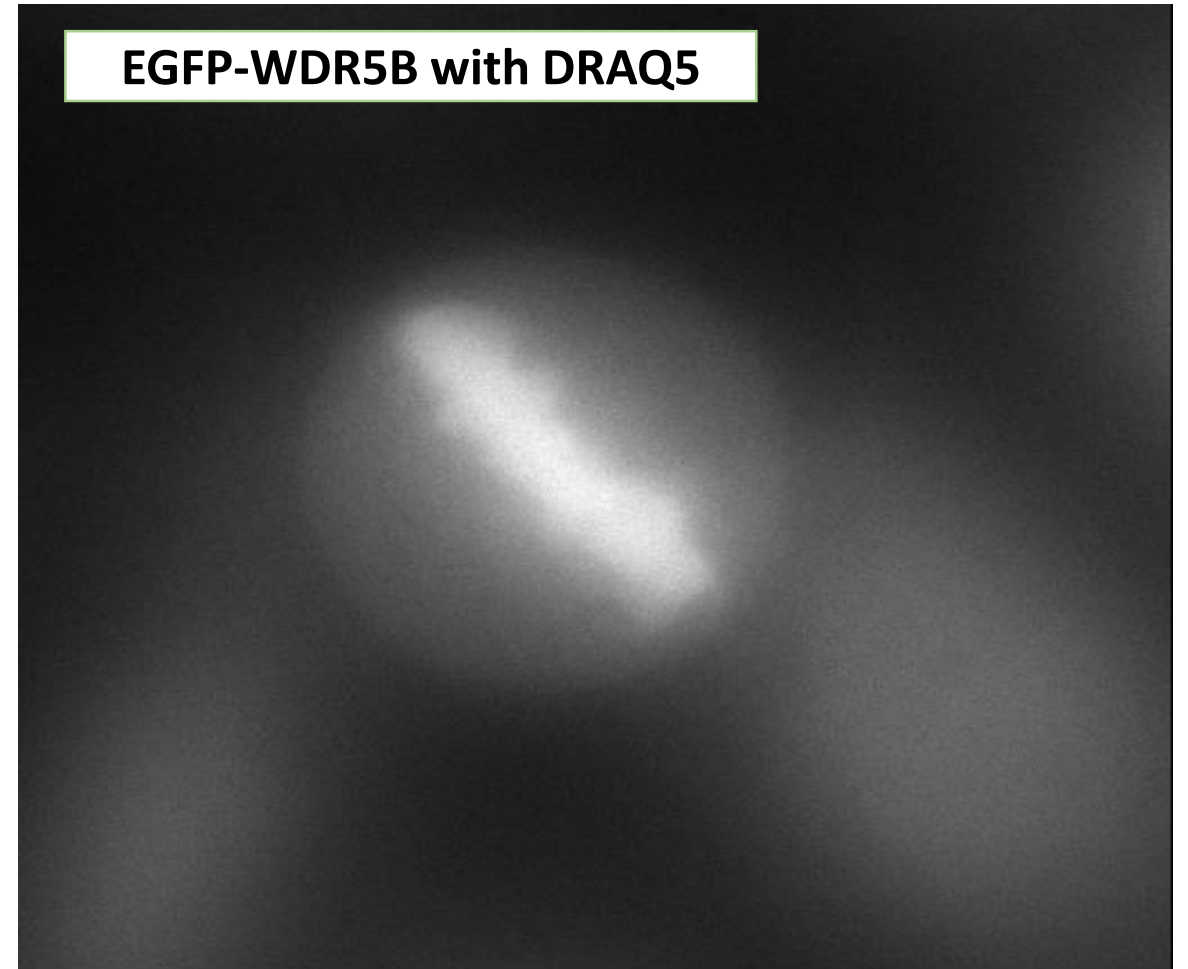
EGFP-KIF2B



EGFP-KIF2C

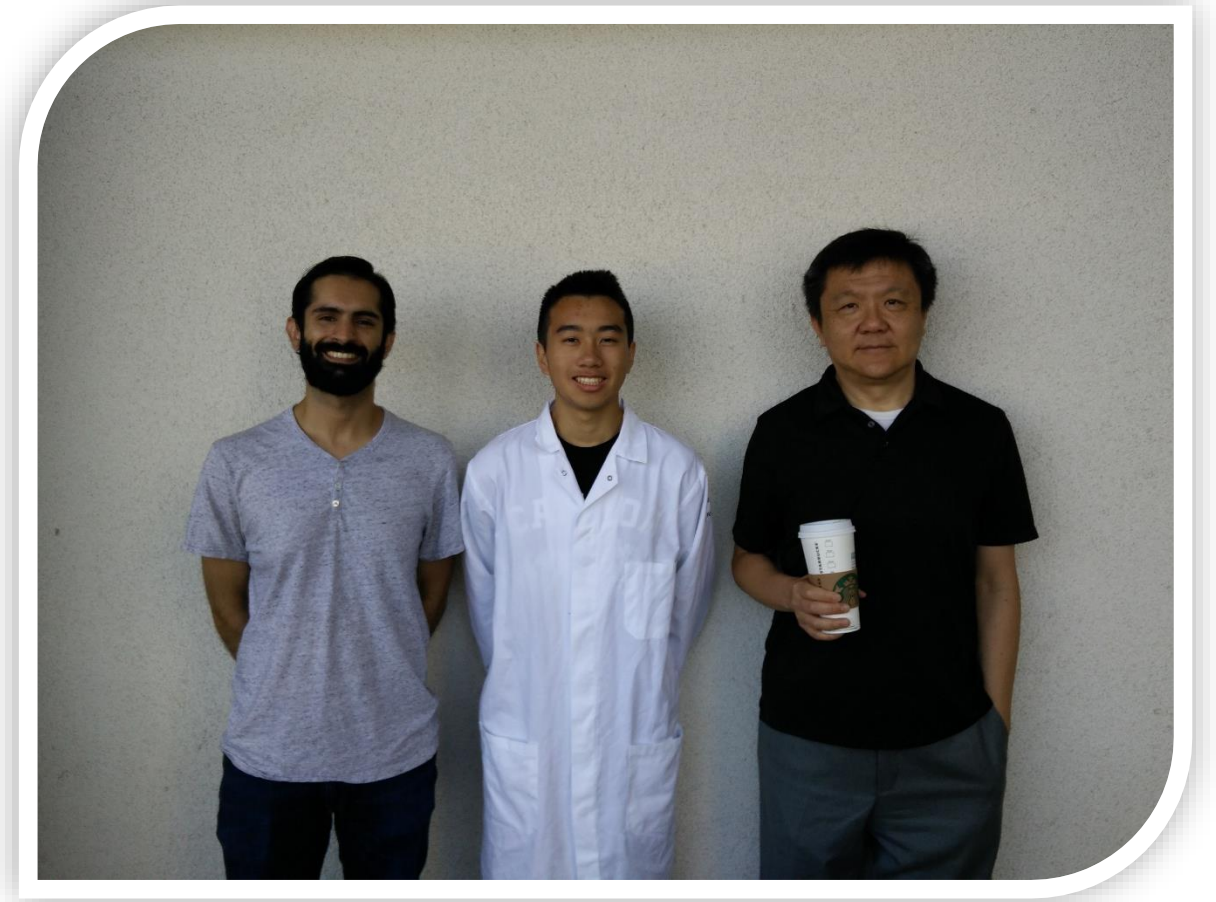


A WDR5 homolog, WDR5B, found localized on chromosomes during metaphase



Thank you!

- Dr. Zach Ma and his students
- My Mentors: Mr. Adeel Lakhani and Mrs. Hayley Nguyen
- Dr. Leslie Wilson for the use of his ultracentrifuge
- Stephanie, Kelly, Arica, Chris, Megan, and the entire CSEP staff



MCDB
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CSEP

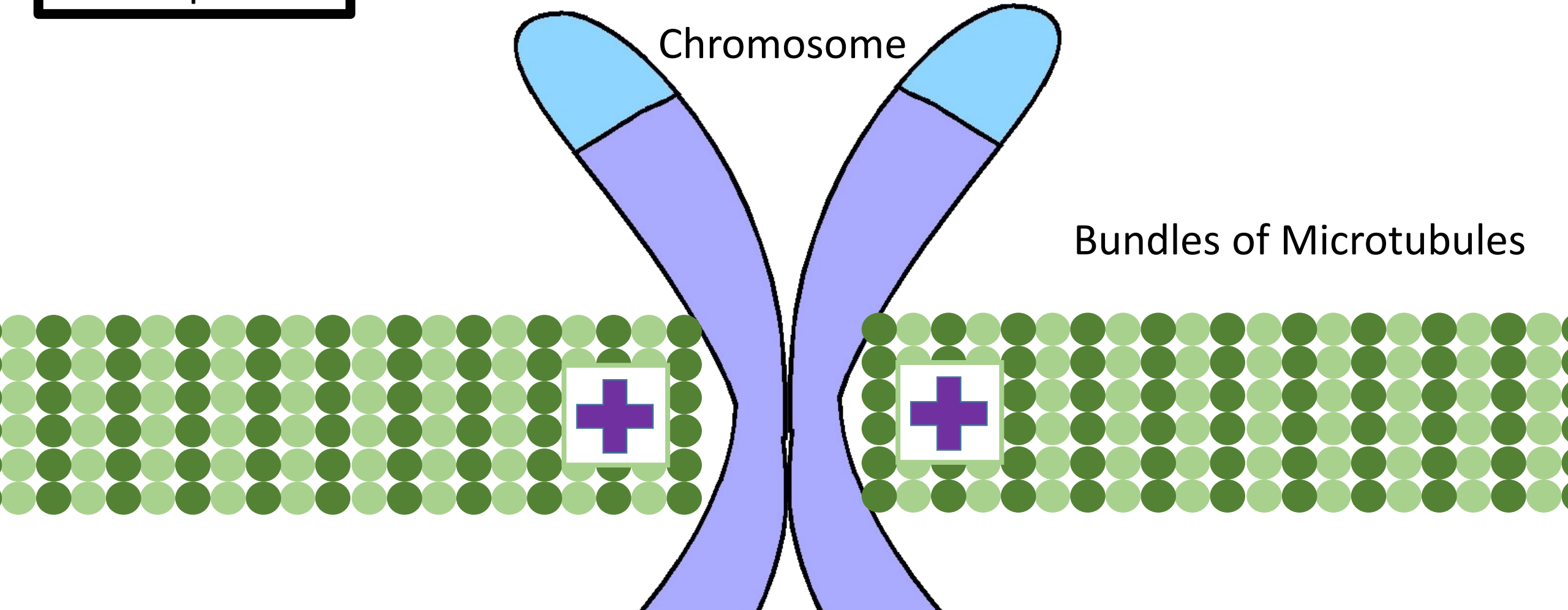
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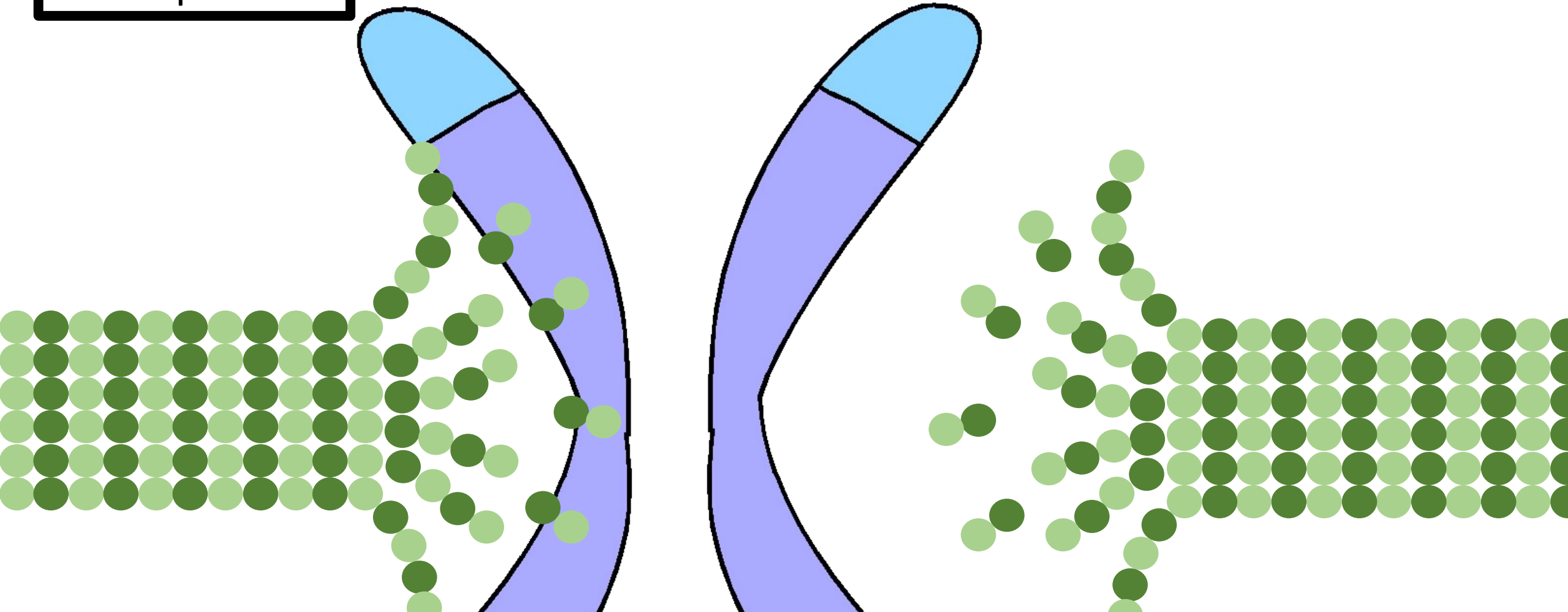
Control over microtubule dynamics is imperative for proper cell division

Metaphase

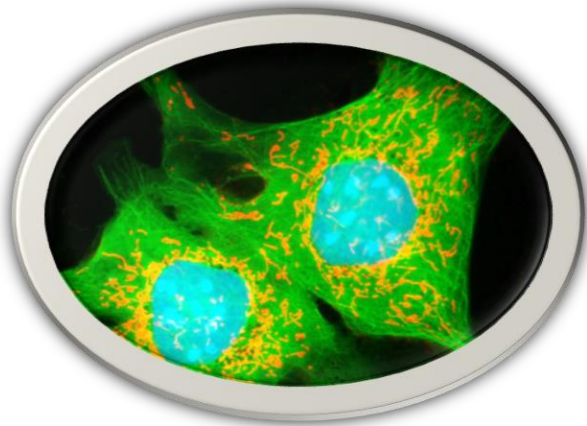


Control over microtubule dynamics is imperative for proper cell division

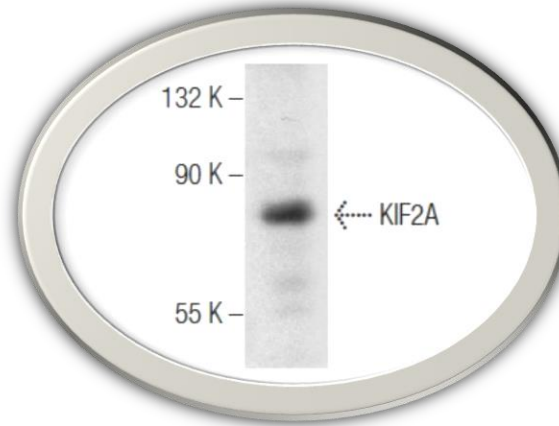
Anaphase



We used biochemical techniques and live cell imaging to carry out our experiment



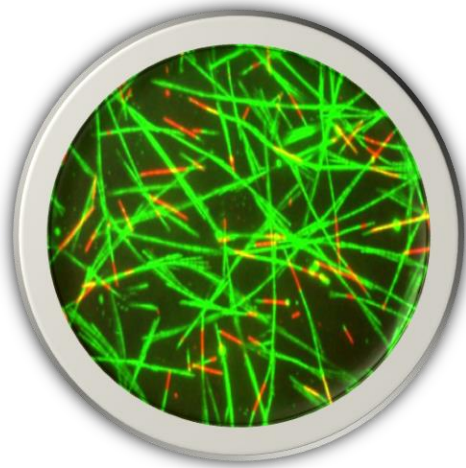
Fluorescent Microscopy



Western Blot



Mammalian Cell Culture

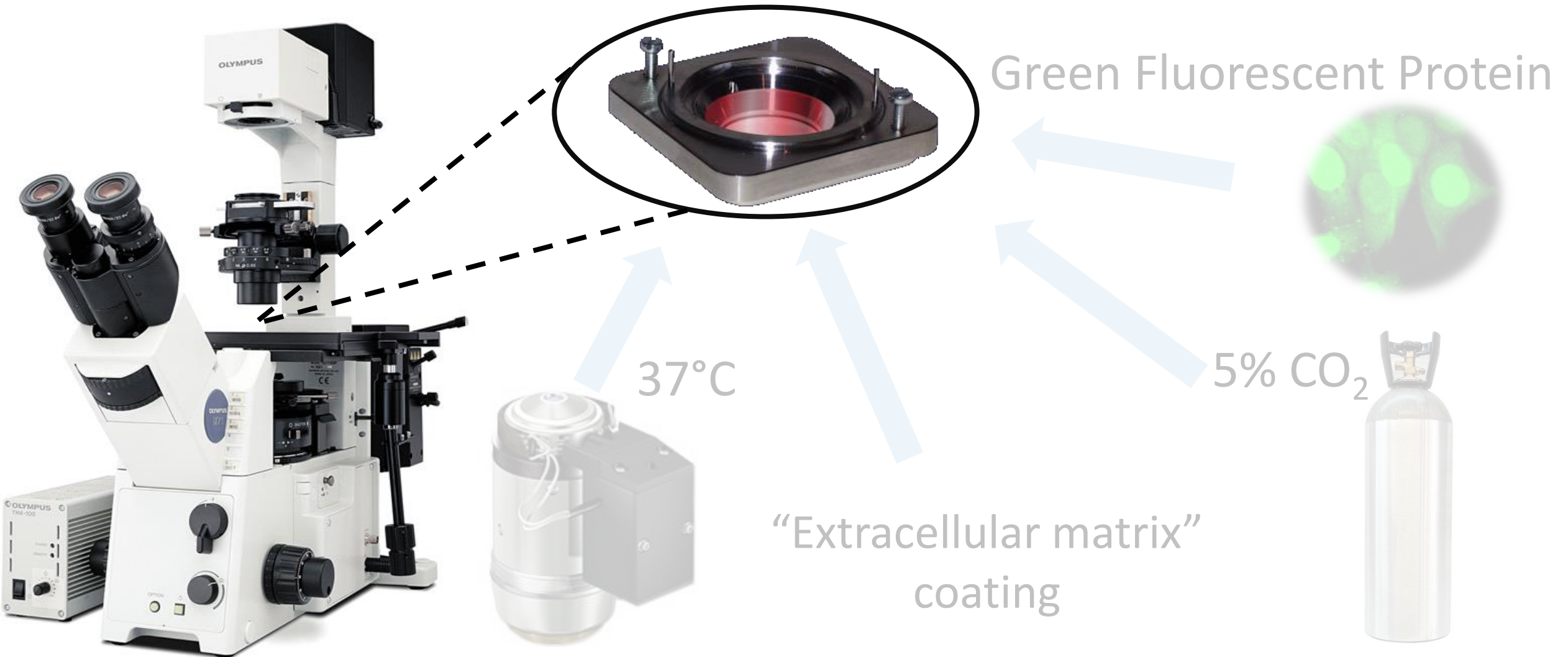


in vitro Microtubule Assay



Protein Purification

Fluorescent live cell imaging can detect localization of proteins in real-time



Fluorescent live cell imaging can detect localization of proteins in real-time

