



Der Vorsitzende des Promotionsausschusses

EINLADUNG

Hiermit lade ich ein zum öffentlichen Promotionskolloquium von

Frau M.Sc. Dyuthi Sreekumar

Molekulare Zellbiophysik
(Prof. Dr. Laura Aradilla Zapata)

am

Freitag, 21. August 2026, 14:00 Uhr s.t.

per Videokonferenz: Link für MS Teams: <https://msteams.link/NSVV>

Raum für die Prüfung: Hörsaal 0.02, Gebäude B2.1

Thema der Dissertation:

**Vimentin Intermediate Filaments as Regulators of Cytoskeletal Architecture,
Mechanics and Crosstalk**

Vimentin intermediate filaments are key cytoskeletal components that form extensive intracellular networks essential for cellular mechanics and organization. While the assembly of individual filaments is well understood, the mechanisms governing the formation of higher-order vimentin networks remain largely unknown. In this dissertation, I establish an extract-based in vitro reconstitution system that recreates cell-like vimentin networks under near-native biochemical conditions. Using this approach, I demonstrate that cytosolic biomolecular factors, rather than intrinsic filament properties alone, are the primary determinants of network architecture and mechanical behaviour, giving rise to distinct cell type-specific network organizations. I further investigate how microtubule-associated proteins regulate vimentin network architecture. Together, these findings establish cytosolic regulation as a central mechanism governing intermediate filament network architecture and provide a new framework for understanding how vimentin networks are organized and integrated within the cytoskeletal system.

Saarbrücken, 7. August 2026



Prof. Dr.-Ing. Georg Frey