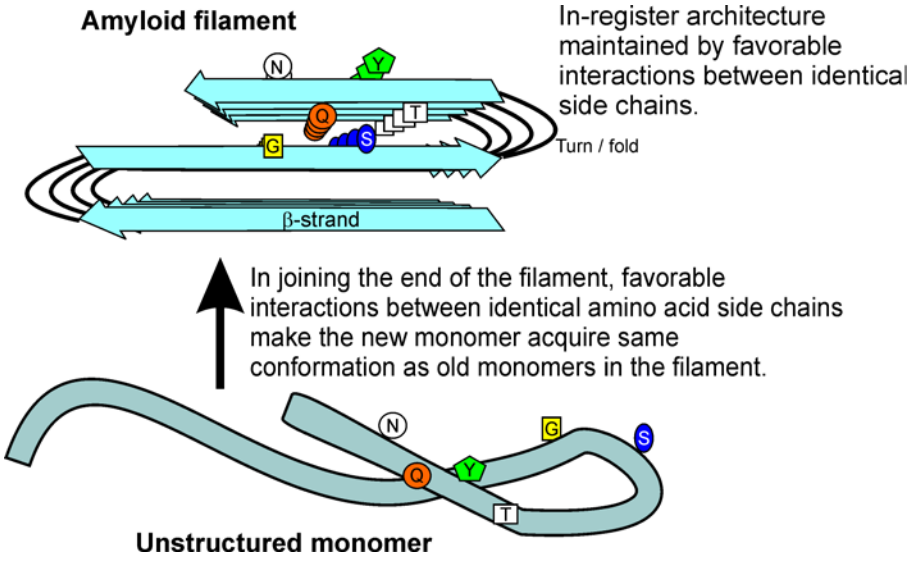
GUEST SPEAKER SEMINAR

Molecular Genetics
UNIVERSITY OF TORONTO

Anti – Prion Systems in Yeast and inositol polyphosphates



The amyloid-based yeast prions are folded in-register parallel beta sheet polymers. Each prion can exist in a wide array of variants, with different biological properties resulting from different self-propagating amyloid conformations. Yeast has several anti-prion systems, acting in normal cells (without protein overexpression or deficiency). Some anti-prion proteins partially block prion formation (Ssb1,2p - ribosome-associated Hsp70s), others cure a large portion of prion variants that arise (Btn2p, Cur1p, Hsp104 - a disaggregase, Siw14p, Upf1,2,3p - nonsense-mediated decay proteins) and others prevent prion-induced pathology (Sis1p - essential cytoplasmic Hsp40). Study of the anti-prion activity of Siw14p, a pyrophosphatase specific for 5-diphosphoinositol-pentakisphosphate (5PP-IP5), led to th discovery that inositol polyphosphates, signal transduction molecules, are involved in [PSI+] prion propagation. Either inositol hexakisphosphate or 5PP-IP4 (or 5PP-IP5) can supply a function that is needed by nearly all [PSI+] variants. Because yeast prions are informative models for mammalian prion diseases and other amyloidoses, detailed examination of the anti-prion systems, some of which have close mammalian homologs, will be important for development of therapeutic measures.

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Host: Dr. Marc Meneghini

Date: Thursday, March 22nd, 2018
Time: 12:00PM
Place: CCBR Red Seminar Room; 160 College St