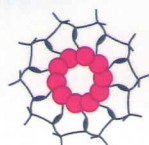
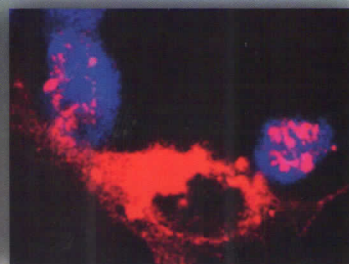
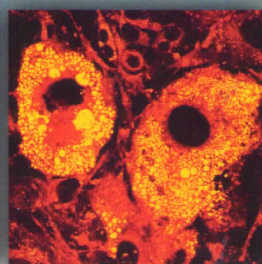
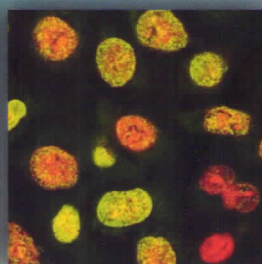
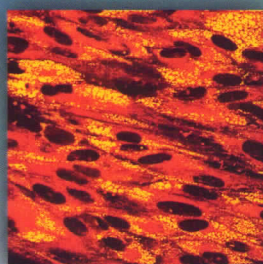
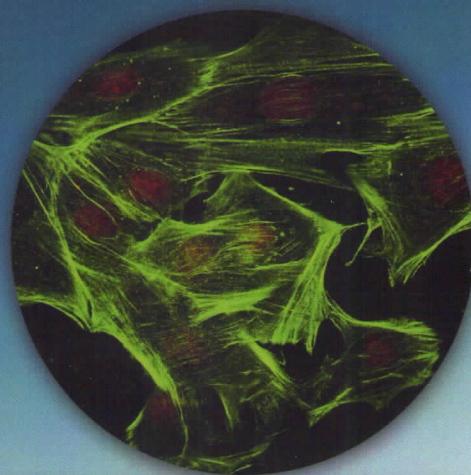


Programme & Book of abstracts

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P-076

Activities of Flightless-I (Fli-I) in the organisation of actin cytoskeleton

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Flightless-I (Fli-I) is a relatively newly identified protein, which alloys leucine-rich repeats (LRR) and gelsolin-homology domains (GH1-6). GH family proteins are involved in actin cytoskeletal rearrangements. Flightless-I is expressed widespread in tissues, mostly in skeletal, myocardial and nerve cells. Fli-I presents in the nucleus where it acts as a hormone-regulated nuclear receptor coactivator. In the presence of serum, Fli-I can translocate from the nucleus to the cytoplasm, where it plays a key role in cell migration, which is thought to be linked to its negative influences on wound healing and tissue regeneration. However, the actin activities of Flightless-I underlying its cytoplasmic functions are not completely resolved. To address this issue the interactions of different, recombinantly produced Fli-I constructs with actin were studied *in vitro* by using fluorescence spectroscopy and TIRFM approaches.

According to our results, Fli-I interacts with both actin monomers and polymers, which endows it with multifunctional activities including *de novo* nucleation and capping. Unlike gelsolin, the actin activities of Fli-I are not *calcium* dependent, which can be explained by the lack of the conservation of type-2 *calcium-binding sites between the two proteins. In addition, the small actin-binding protein profilin directs the activities of Fli-I to filament end capping.*

In conclusion, our results suggest that in the cytoplasmic environment Flightless-I interferes with actin dynamics by preventing monomer addition to polymer ends, which may explain its negative effects on cell migration, and thus wound healing and tissue regeneration.

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P-077

Analysis of Heterodimeric Interactions

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Several intrinsically disordered proteins (IDPs) interact with other proteins through weak interactions without a folded protein structure. This process happens at the same time: coupled folding and binding, a process called Mutual Synergistic Folding (MSF). MSF proteins are IDPs without stable tertiary structure, but they represent a new subset of IDPs.

Lately, we collected information about MSF proteins. Induced by Binding (MFIB, available at <http://mfib.biol.u-szeged.hu>), in this study, we compared the residues involved in the homodimeric and monomeric interactions. We conclude that MSF homodimeric interactions occur in a specific area on the contact surface of the protein. The main driving force of the dimerization is the interaction of the backbones and the formation of hydrogen bonds.

In this work, we investigated the interactions of heterodimers. Heterodimers have a different interaction pattern, therefore, another mechanism is involved.

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Keywords: protein interaction, intrinsically disordered proteins

References:

- Magyar C, Mentés A, Fichó E, Csizmadia S. "Mutual Synergistic Folding" Proteins. *Bioinformatics*. 2018;34(12):2155-2163.
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P-098

Structural differences between Gelsolin and Flightless-I proteins and their behaviour in the presence and absence of Ca^{2+} -ion**Péter Gaszler**, Péter Bukovics, Rauan Sakenov, Réka Pintér, Tamás Huber and Beáta Bugyi*University of Pécs, Department of Biophysics, Pécs, Hungary*

Gelsolin homology (GH) domain family proteins are central to the control of the actin cytoskeleton. Its eponymous member, the six-GH-domain gelsolin (GSN) is a calcium-activated multifunctional actin regulator. Recently, a unique member; Flightless I (Fli-I) was identified characterized by the six-GH-segment structure, but preceded with a leucine rich repeat. Both GSN and Fli-I are implicated in pathologies, including sepsis and tissue regeneration, respectively. Albeit, the structural-functional relation in GSN upon Ca^{2+} -dependent activation is well described the role of Ca^{2+} in the actin activities of Fli-I is unravelled. Our functional analysis indicates that the GH16 domains of GSN and Fli-I respond to Ca^{2+} differently implying different conformational characteristics of the GH domains in the two proteins. To assess this question we aimed to investigate the structural behaviour of GSN and Fli-I in the presence and absence of calcium-ion by using fluorescence spectroscopy and biochemical approaches.

The change in the fluorescence parameters (emission and maximum wavelength) of Trp in GSN upon quenching by acrylamide or guanidine-hydrochloride induced chemical denaturation indicates marked conformational changes in response to Ca^{2+} . This is in agreement with the high-resolution structural model of GSN activation. In contrast, our data suggest that the microenvironment of Trp residues in Fli-I GH16 is different from that of GSN even in Ca^{2+} -free conditions and not markedly affected by the presence of the divalent cation. Spectroscopic data is supported by the different kinetics of limited proteolysis observed for GSN and Fli-I GH16. Our experimental findings are supported by bioinformatics analysis, which reveals that the type-2 Ca^{2+} binding sites and the C-terminal tail mediating structural changes in GSN upon Ca^{2+} -activation are not conserved in Fli-I GH16. Altogether, our work reveals different Ca^{2+} -response and predicts distinct mode of activation of GSN and Fli-I.

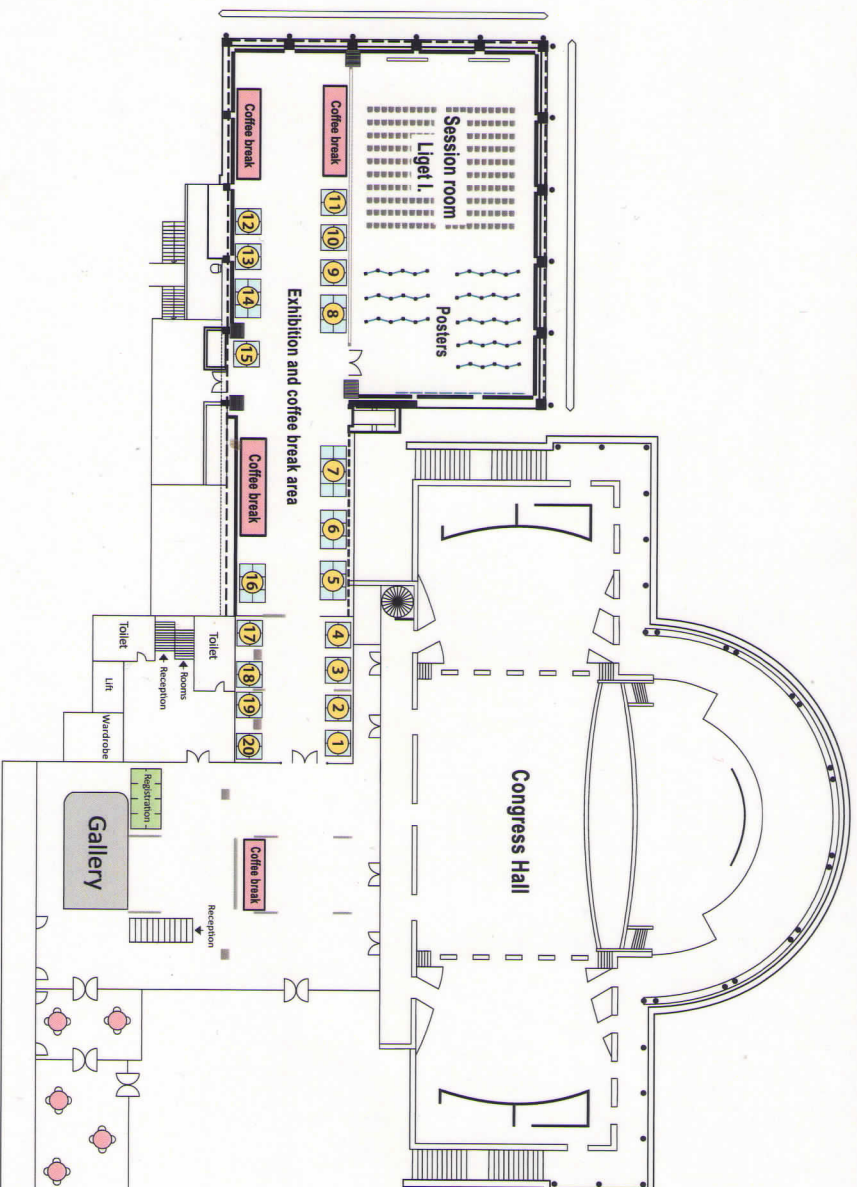
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Map and exhibition floor plan



Our exhibitors

- | | |
|------------------------------|-----------|
| AP Hungary Kft. | 9. stand |
| Auro-Science Consulting Kft. | 13. stand |
| Biocenter Kft. | 3. stand |
| Bio-Kasztel Kft. | 4. stand |
| Biomedica Hungaria Kft. | 1. stand |
| Bio-Rad Magyarország Kft. | 12. stand |
| Bio-Science Kft. | 20. stand |
| Carl Zeiss Technika Kft. | 15. stand |
| Eppendorf Austria GmbH | 2. stand |
| Eurofins Genomics GmbH | 17. stand |
| G&G Instruments Kft. | 5. stand |
| Greiner Bio-One Hungary Kft. | 18. stand |
| Kvalitex Kft. | 14. stand |
| Thermo Fisher Scientific | 7. stand |
| Merck Kft. | 8. stand |
| Microtrade Kft. | 19. stand |
| Per-Form Kft. | 11. stand |
| Roche (Magyarország) Kft. | 6. stand |
| TS Labor Kft. | 10. stand |
| Unicom Magyarország Kft. | 16. stand |