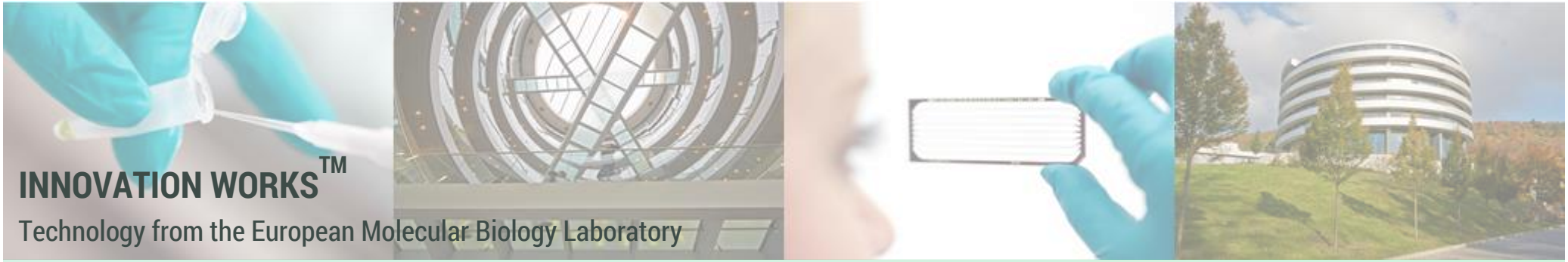

INNOVATION WORKS™

Technology from the European Molecular Biology Laboratory

SP3 - ultrasensitive, rapid, unbiased and efficient protein purification suitable for automation

EMBLEM Ref. 2014-006

Challenge

- sensitive proteomic analyses such as mass spectrometry are frequently used in research and development as well as clinical diagnostics applications
- the bottleneck is the sample preparation which is often biased and leads to a loss of sample material

Commercial Opportunity

- technology is ready-to-use
- licensing of the technology
- full technology transfer

Technology

- protein purification for subsequent proteomic analysis based on paramagnetic beads
- allows for the use of any chaotrope or salt
- sample preparation is carried out in a single reaction vessel, preventing sample loss during the process
- in four steps and only 15 minutes handling time (excluding incubation) from cell culture to mass spectrometry-ready sample
- SP3 is perfectly suitable for automation

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Intellectual Property

EP priority patent application filed
07.02.2014
PCT patent application filed

EMBLEM
TECHNOLOGY TRANSFER

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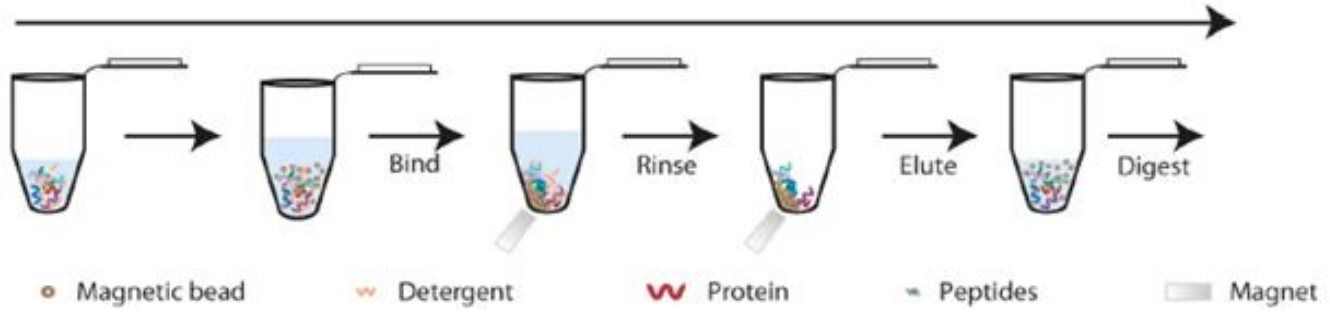
The methods used for sample preparation for proteomic analyses used to date (e.g. FASP, Stage Tip) have limited sensitivity and do not allow much flexibility for the experimenter's choice of reagents, which limits their use.

Furthermore, they require several handling steps and moving samples between containers causing substantial loss of material which makes the method inconvenient and unsuitable for automation. There is a clear need for a technology that overcomes these limitations.

Our novel Single-Pot, Solid Phase-enhanced, Sample Preparation (SP3) technology allows for ultrasensitive (< 1µg), rapid (< 15 mins handling time), unbiased and flexible sample preparation that is suitable for subsequent proteomics analysis, individually or in a high-throughput manner. SP3 can be easily automated.



The ease of use of SP3 is unprecedented. It takes only 15 minutes to complete and the eluate can be directly used in fractionation or mass spectrometry. Sample material is lysed with the method of choice. SP3 allows the use of any detergent, chaotrope or salt. Magnetic beads are added to the sample, mixed, and incubated for several minutes. The tube is then placed in a magnetic stand where the beads are captured on the side and washing/digestion steps are performed as desired. The proteins are then eluted with a buffer, the composition of which can be adapted to the downstream application envisaged.

Reference

Hughes et al. 2014, Mol Syst Biol
doi: 10.15252/msb.20145625