HIPAD
Project ID: 278832
Funded under: FP7-HEALTH

High-Density Peptide MicroArrays and high-throughput, label-free detection of peptides, modifications and interactions

From 2012-01-01 to 2016-04-30, closed project

Project details

<table>
<thead>
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<th>Total cost:</th>
<th>Topic(s):</th>
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<td>EUR 6 382 419,95</td>
<td>HEALTH.2011.1.1-1 - SME-targeted research for developing tools and technologies for high-throughput research</td>
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<tr>
<td>EU contribution:</td>
<td>Funded scheme:</td>
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<tr>
<td>EUR 4 823 014</td>
<td>CP-FP - Small or medium-scale focused research project</td>
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<td>Coordinated in:</td>
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<td>Denmark</td>
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Objective

Proteins are extremely malleable building blocks of life involved in all aspects of biology. Many diseases are caused by proteins aberrations, and proteins are frequent targets of intervention. Mapping all proteins and their functions are expected to yield pervasive medical and biotechnological benefits. However, even the most comprehensive and high-throughput proteins discovery technologies are seriously challenged by the extreme diversity and low abundance of many proteome components; a problem, compounded by the lack of affinity reagents and validated probes for sample preparation and identification. Our concept is that shorter protein fragments, or peptides, may offer solutions to many of these problems as peptides may represent or mimic proteins. Using in situ solid-phase peptide synthesis, computerized photolithography and novel photochemistry, we have recently generated peptide microarrays of up to 2 million addressable peptides. This unprecedented high-density and high-content peptide microarray technology could make inroads into the kind of high-throughput analysis needed to address the entire human proteome. Here, we aim to exploit this potential by using and improving three different, yet complementary, label-free detection technologies allowing sensitive, high-resolution determinations of the identity, quality and/or modification of individual members of a peptide microarray, and real-time monitoring of any interacting molecular receptor. We will also develop peptides as rapid, specific, and renewable affinity reagents for complex sample preparation, and develop peptides as probes and complex biosensors. Three SME’s constitute the backbone of this collaboration, receiving 50% of the budget, and enjoying significant opportunities from the booming protein/peptide microarray market. Furthermore, solutions to these unmet needs of proteomics are believed to have incalculable benefits for European health, innovativeness and competiveness.

Related information

Report Summaries

Final Report Summary - HIPAD (High-Density Peptide MicroArrays and high-throughput, label-free detection of peptides, modifications and interactions)
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