Universität Basel

Research Project

NanoGhip - Nano-switchable GPCR–arrestin biochip for drug discovery

Third-party funded project

Project title NanoGhip - Nano-switchable GPCR–arrestin biochip for drug discovery
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Organisation / Research unit
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Our motivation is to overcome key shortcomings of current GPCR lab-on-a-chip nanoscale drug discovery and extend the established and well accepted but limited SPR-based drug screening by new possibilities to address inherently difficult-to-screen GPCRs, and more than that, to obtain detailed functional information about differences of ligands at nanoscale and the biological effects that they trigger for more comprehensive drug profiling. In fact, the need to identify drugs that discriminate between G protein and arrestin signaling has revolutionized GPCR drug discovery setting paradigm shifts and defining “biased agonism” or “functional selectivity”. Investment-intense activities can be observed in terms of patent disclosures for new chemical entities with such properties by Biotech, but also large Pharma companies.

NanoGhip finds application not only in lab-on-a-chip nanoscale drug screening, but also assists structure-based drug discovery (SBDD), e.g. for determination of ideal crystallization conditions. Of course, NanoGhip could be as well implemented in diagnostic lab-on-a-chip tools to detected overregulated na-tive ligands as indicators of disease on-site.

Keywords membrane proteins, polymer membranes, lab-on-a-chip screening
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