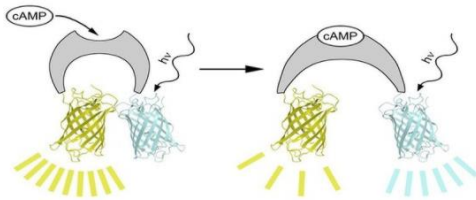


Cyclic AMP Biosensor

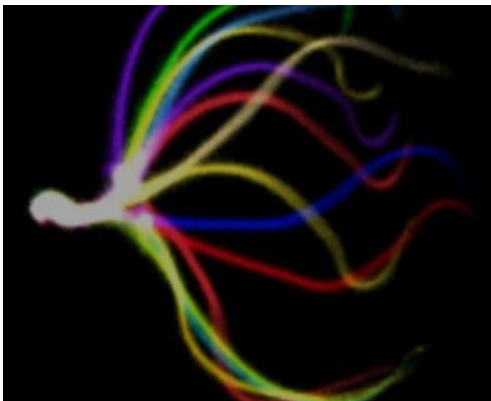
Genetically encoded FRET-based biosensor for cAMP

Invention

Cyclic AMP is a key molecule in 2nd messenger cell signalling. Great effort has been taken to develop sensors that allow for noninvasive assessment of cAMP concentrations in living cells. Genetically encoded biosensors hold great promise to allow spatial and temporal measurements of cAMP concentrations in living cells. Yet, the sensors available up to now are hampered by the low affinity of the cAMP binding moieties employed. For example, the Epac-based sensors presented by Nikolaev et al. US 8889425 B2 bind cAMP with an affinity in the low micromolar range, which may be insufficient for measuring basal cAMP levels.



Principle of a genetically encoded FRET-based biosensor for cAMP



cAMP dynamics in a sperm flagellum

Commercial Opportunities

The invention is available for licensing.

Current Status

The invention is described and claimed in the PCT application WO 2017/045970 A1 filed 09/06/2016.

The national german counterpart DE 10 2015 115 640 B4 filed 09/16/2015 has been granted. This application is the priority application to said PCT application. The patent protects the use of a prokaryotic cAMP nucleotide-binding domain for use in a biosensor.

Relevant Publications

Mukherjee et al.: eLife 2016;5:e14052 DOI: 10.7554/eLife.14052

An invention of Center of Advanced European Studies and Research.

Competitive Advantages

- Nanomolar affinity
- Fast binding/unbinding kinetics
- Expressed and purified in high amounts from prokaryotic cells
- Well expressed in eukaryotic cells.
- Measurement of cAMP levels in solution in vitro, in cellulo, and in vivo
- No interaction with molecular pathways of eukaryotic cells
- Amenable to subcellular targeting

Technology Readiness Level

1 2 3 4 5 6 7 8 9

System prototype demonstration in operational environment

Industries

- Bio-Technology

Ref. No.

F-0059

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