Discrimination of subtypes for influenza surveillance using a peptide-based detection platform(flu type)

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The only cost-effective protection against influenza is vaccination. Due to rapid mutation continuously, new subtypes appear which require annual immunization. For a correct vaccination recommendation, the circulating influenza strains have to be detected promptly and exactly and characterized regarding their antigenic properties. Due to recurring incidents of vaccine mismatches, there is a great need to speed up the process chain from identifying the right vaccine strains to their administration. The monitoring of subtypes as part of this process chain is carried out by national reference laboratories within the WHO Global Influenza Surveillance and Response System (GISRS). To this end, thousands of viruses from patient samples (e.g. throat smears) are isolated and analyzed each year. Currently, this analysis involves complex and time-intensive (several weeks) animal experiments to produce specific hyper immune sera in ferrets, which are necessary for the determination of the antigen profiles of circulating virus strains. These tests also bear difficulties in standardization and reproducibility, which restricts the significance of the results. To replace this test, a peptide-based assay for influenza virus subtyping is developed. The differentiation of the viruses takes place by a set of specifically designed peptidic recognition molecules which interact differently with the different influenza virus subtypes. The differentiation of influenza subtypes is performed by pattern recognition guided by machine learning algorithms, without any animal experiments.

Speaker Biography

Henry Memczak has studied Nanotechnology at the University of Kassel, Germany and completed his PhD in Biochemistry in 2014 at the University of Potsdam, Germany and the Fraunhofer Institute for Cell Therapy and Immunology, Germany. He has worked on the development of analytical biosensors for influenza detection and methods for Peptide-Based Bio Interaction Analysis for several years, he did\ publishing in published several papers, holds two patents and Co-founded the company QPA Bio Analytics GmbH for the commercialization of novel peptide biochips. For his dedicated translational research, he received several Awards and Scholarships.

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