

Salivary Biomarkers- Towards Future Clinical and Diagnostic Multifaceted Tool in Cancer

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Saliva is generated within the salivary glands by acinus cells, collected in small ducts, and subsequently released into the oral cavity. There are three major and numerous minor saliva-producing glands located in and around the mouth and throat. Saliva serves to initiate the breakdown of lipids and starches via endogenous enzymes. However, in recent years, what we have come to understand about salivary secretions and the oral cavity has changed dramatically. Studies have shown that saliva actually contains a variety of molecular and microbial analytes. Although proteomic and transcriptomic indicators have yielded the most promising results to date, information obtained from oral microbes and immunologic factors remains one of the more intriguing aspects in the pursuit of salivary biomarkers. Although the mechanism by which these disease indicators come to exist in saliva has not been explained fully, these findings insinuate that oral fluids may represent a significant source of discriminatory biomarkers for local, systemic, and infectious disorders. The use of saliva as a diagnostic fluid has yet to become a mainstream idea. This partially stems from work revealing that while most analytes detected in the blood serum are also found in saliva, their levels are substantially diminished. For example, in healthy adults, IgA levels are normally 2.5 to 5 mg/ml in serum and 250 to 500 µg/ml in saliva. Similarly, IgG (5 to 30 mg/ml versus 5 to 30 µg/ml) and IgM (0.5 to 1 mg/ml versus 5 to 10 µg/ml) levels in serum are severalfold higher than those found in saliva. (Even so, the correlation between salivary and blood-based constituents implies that while these two biofluids are separate and unique, they may be linked on a molecular level. Hence, it is imperative that we explore saliva as a potential alternative to blood- and tissue-based diagnostics. Salivary biomarkers are entities within the body capable of providing impartial information regarding the current physiologic state of a living organism. Salivary biomarkers exist in a variety of different forms, including antibodies, microbes, DNA, RNA, lipids, metabolites, and proteins. Alterations in their concentration, structure, function, or action can be associated with the onset, progression, or even regression of a particular disorder or result from how the body responds to it. A collection of reliable and reproducible biomarkers unique to certain maladies is often referred to as a biomarker or molecular signature. Understanding and evaluating the significance of an individual's salivary biomarker signature can be useful in determining the presence, location, and even likelihood of disease. Thus, salivary biomarkers serve as a valuable and attractive tool in the detection, risk assessment, diagnosis, prognosis, and monitoring of disorders/ diseases, like cancer.

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Biography:

Ulrich D. Jentschura has been working in theoretical physics since 1996. Since then, Ulrich has been active in fields as diverse as quantum electrodynamics, quantum field theory, heavy-ion physics, theoretical astrophysics and the physics of the solid state. He has published research articles in Physical Review A, B, C, D, and E, which encompass many different subfields of physics. Recently, and somewhat involuntarily, Ulrich's research interests have branched out into medicine, where he performed a case study on a tumor that plagued his thyroid. Ulrich is working as a (full) professor of physics at Missouri University of Science and Technology in Rolla, Missouri, USA, and holds habilitation degrees from the Universities of Dresden and Heidelberg.