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A Review of Commercialisation Issues for Biosensors and Bioelectronics

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Abstract

While conventional technologies such as quantitative real-time polymerase chain reaction (PCR) are used to detect COVID-19, they are time-consuming, labour-intensive and are sparsely unavailable in remote settings. Point-of-care (POC) paper-based biosensors, such as lateral flow test strips or microfluidic biosensors are typically low-cost and user-friendly, are now being used for rapid diagnosis but since they are indicators do not always produce accurate results. These sensitive specific biosensors are used to detect antibodies, antigens or nucleic acids in samples of saliva, sputum and blood. Biosensors can be applied for medical diagnosis of many other diseases, environmental monitoring, food, water, and agricultural product processing. They can be connected to smartphones and tablets to provide a quick personalised result to uses that save time and enables clinicians to spend it on seriously infected patients. As expected, there are now numerous papers, research reports, public and private surveys, videos etc, being published and carried out worldwide on biosensor-based diagnostic systems for Covid and other virus diseases that can be seen on the Internet. This presentation is therefore confined to reviewing some of the key manufacturing, commercialisation, marketing and supply issues associated with making specific biosensor systems widely available to a global population including less technologically developed countries. The global biosensors market size is forecast from 2020 to 2025, with a CAGR of 9.6%% is expected to reach USD 31270 million, with applications in healthcare, and the environment. Advances in the last decade in bioelectronic systems, artificial intelligence, nanotechnology and genetic engineering have produced an exponential surge in the development, manufacture and performance of

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Biography

David Tolfree, a professional physicist and Senior Fellow of the Institute of Physics, has forty years' R&D and senior management experience working for the UK's Atomic Energy Authority and Science Research Councils (SRCs). In the late 1990s he was head of the EPSRC's Daresbury Laboratory's European Office and its Research Services. He was also a consultant to a UK Government Dept for the exploitation of micro-nanotechnologies, and one of the founders of MANCEF and the UK Institute of Nanotechnology. In 1999 he co-foundered Technopreneur Ltd, a consultant company for the exploitation of emergent technologies. He is currently the European Vice President of MANCEF International and its Executive Director, and member of the Editorial Advisory Board of the magazine CMM International. David has organised, chaired and been a speaker at over 42 international conferences on micro-nano and emerging technologies. He has 186 publications that include books, newspaper, journal and magazine articles and conference proceedings.

