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Approach against emerging pathogens based on epitope and antibody identification

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The SARS-CoV-2 experience, which has spread rapidly around the world, makes us aware that we need approaches to deal quickly with emerging pathogens. The supposition is that nothing is known about the new pathogen, that there are no diagnostic tools available, no specific therapies or vaccines. However, the immune system of recovery patients can produce antibodies against immunogenic epitopes of the emerging pathogen which protect them from reinfection. Therefore, the simple procedure presented here is based on identifying these epitopes and protecting antibodies against them. These are two key elements necessary to combat an emerging pathogen. Also, the immunogenic epitopes are identified by screening peptide libraries using purified antibodies from convalescent patients. Antibodies against these epitopes are identified from the antibody repertoire expressed during infection that has been amplified from B cells isolated from convalescent patients. This repertoire is used to build antibody libraries based on a displayed system such as phage display for screening to identify antibodies against the immunogenic epitopes. With these two components, we can identify the new pathogen, develop diagnostic and therapeutic tools, including epitope vaccines, neutralizing antibodies, and opsonizing antibodies. In conclusion, we outline a straightforward and simple strategy to control emerging pathogens such as SARS-CoV-2.

Biography

Dr. Marco Palma is an independent researcher implicating in different research projects including strategies against emerging pathogens and the founder of Current Bioscience, a project that aims to promote open access publications of current studies in bioscience. He did his Ph.D. in Microbiology at Karolinska Institute (Sweden) where he studied Staphylococcus aureus fibrinogen-binding proteins and their role as virulence factors. He was a visiting scientist at Dartmouth (USA) and a postdoctoral associate at Cornell (USA). He worked for many years as a research scientist at a biotechnology company in Madrid (Spain). He has published more than 18 papers in reputed journals. In the last years, he worked independently by creating his own start-up project at Cambridge (U.K.)

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