of antibiotics and have had a significant role in the discovery and development of commercially successful drugs of all classes. Over 75% of the antibacterial new chemical entities (NCEs) introduced worldwide between 1981 and 2002 were based on natural products. The unmatched chemical diversity and complexity of natural products is one reason for their success over those obtained by pure chemical synthesis. Another reason for their superiority can be explained by the fact that their synthesis evolved naturally in response to needs and challenges of the natural environment generating compounds which are pre-selected for activity. Despite these facts, natural product research has recently gone through a phase of reduced interest. Big pharmaceutical companies in particular have downgraded or even stopped this kind of research. The reasons for this development may be that natural products are often produced in low quantities and as mixtures of similar compounds, the rediscovery of known compounds and the challenge of natural product derivatisation using classical chemical means.

The past few years have witnessed major developments in the use of innovative natural product related technologies, such as fermentation optimisation, separation, structure elucidation and dereplication allowing much faster access to sufficient quantities of pure natural compounds. The application of modern medicinal chemistry adapted to the special needs of natural products is also an efficient way to revisit and recycle old antibiotic classes. The use of modern Genome-based technologies, established in the past few years, offers the opportunity to increase the attractiveness of natural products. Genome-based screening technologies provide fast access to the enormous genetic potential of Actinomycetes, established in the past few years, offering the opportunity to increase the attractiveness of natural products. Genome-based screening technologies provide fast access to the enormous genetic potential of Actinomycetes, soil bacteria known to represent one of the most important sources for bioactive metabolites. Additionally, genetic engineering technologies will help to overcome two of the main hurdles connected to natural products, the difficulty in derivatising complex structures and the quantitative improvement of the production yield.

By focussing on examples in the field of genome based screening and genetic engineering this presentation will give an overview of major improvements that may lead to a rediscovery of natural product based drugs to meet the urgent need for new antibiotics.

Respiratory pathogens and vaccination

Clinical evaluation of a new ID-Tag RVP assay for the detection of 20 respiratory viruses

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Objectives: To evaluate the performance of the ID-Tag RVP test for the detection of respiratory viruses.

Methods: NP specimens [N = 227] were collected from symptomatic patients under ERB approval and were tested by the ID-Tag RVP test (TmBioscience Corp’n, Toronto, Canada) and conventional DFA plus culture. The RVP test is a new test for the detection of 20 respiratory viruses that uses multiplex PCR, a Universal Array of oligonucleotides (TmBioscience), and a fluidic microbead array (Luminex X-Map). The test detects Influenza A (subtypes H1, H3, and H5 Asian lineage), Influenza B, Paramyxovirus types 1, 2, 3, 4, RSV types A and B, Adenovirus, Metapneumovirus, Rhinoivirus/Enterovirus, Coronavirus 229E, OC43, NL63, HKU1, and (SARS-CoV). The ID-Tag RVP test was performed according to manufacturer’s instructions. Briefly, viral nucleic acid was amplified by a multiplex PCR followed a multiplex Target Specific Primer Extension (TSPE) reaction and sorting of TSPE products using the Luminex X-Map system. DFA and culture were performed using MCabs and R-Mix shell vials (Diagnostic Hybrids Inc.). For discordants and RVP positives where the targets were not tested by the ID-Tag, a second PCR (unique primers) and sequencing was performed as the comparator test.

Results: Twenty-two of 227 specimens (9.7%) failed to give a signal for the internal control indicating extraction failure or was called equivocal for at least one target. Of the 206 specimens analysed, 135 were RVP+ DFA/culture+ and 37 were RVP– DFA/culture– concordant. There were 7 RVP– DFA/culture+ and 27 RVP+ DFA/culture– discordants. After resolution of discordants RVP had a sensitivity of 95.8% (138/144) compared with 93.7% (135/144) for DFA/culture. RVP detected an additional 26 confirmed positives including 22 Rhino/Entero, 1 NL63, and 3 HKU1 that are not routinely tested by DFA or culture and 4 additional Flu B positives that were missed by DFA/culture.

Conclusion: The ID-Tag RVP test is more sensitive than DFA/culture and detects respiratory viruses not routinely tested for. Overall 22.5% additional positive specimens were detected that were either missed by DFA/culture or not tested for. The ID-Tag RVP test should improve the ability of hospital and public health laboratories to diagnose viral RTIs in a hospital or community outbreak situation.