Small Molecules for Treatment of Retinal Degenerative Diseases

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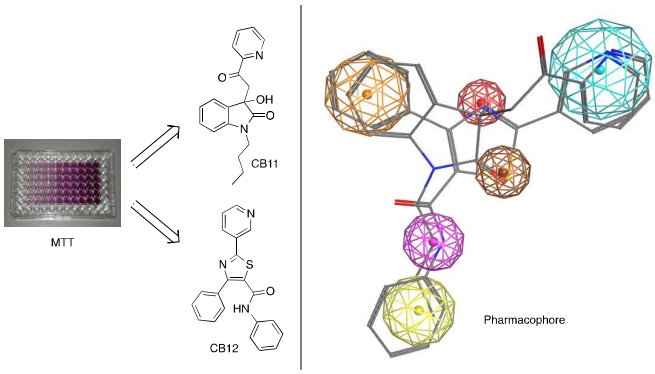
Retinitis Pigmentosa (RP) is a family of progressive retinal degenerative diseases that effects small populations. The diseases are associated with many different genes hindering drug development – there are currently no treatments. We have hypothesized that metabolic stress is downstream to many of the gene mutations. Recently, a high throughput screen (HTS) was developed under conditions that mimic RP.[1] Hits from this primary screen were then subjected to a second assay that measures mitochondrial flux capacity, addressing the oxidative stress component affiliated with this neurodegenerative process. Two of these hits, CB11 and CB12, come together to form a pharmacophore from which novel chemical entities were synthesized. From these efforts, a small panel of analogs were developed and tested as a means to optimize protection of mitochondria from metabolic stress. Achieving cellular protection via the cell's "power house" offers a novel approach towards treating this disease and the potential for addressing other pathologies where mitochondria are part of the degenerative process.



1) Beeson, Craig Cano; Rohrer, Baerbel; Perron, Nathan R. Compositions and methods for the treatment of degenerative diseases PCT Int. Appl. (2011), WO 2011119869 A1 20110929