Title: **A new luminogenic sensor for the activity of S1PL (sphingosine-1-phosphate lyase)**

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In recent years the study of sphingolipids has shown that they not only play a role as structural building blocks but as signalling molecules for a wide array of inter- and extracellular processes. As such, if the activity of key enzymes in their metabolism can be quantified that would allow for the development of screening methods that in turn would yield selective inhibitors for these enzymes.

Sphingosine-1-phosphate lyase (S1PL) is one such enzyme, in charge of sphingosine-1-phosphate degradation (S1P) to give ethanolamine-phosphate and hexadecenal. Hence by regulating the levels of S1P, it can regulate the processes mediated by sphingolipid metabolism and therefore cellular signalling.

Until recently, the described probes to quantify the enzymatic activity of S1PL had been fluorogenic, however their sensitivity is not good enough for the accuracy needed in such studies. On that account, luminogenic probes were the next step forward. For this reason, in this work the synthesis of a sphingosine-based probe appropriately functionalized with firefly luciferin as luminogenic reporter for quantifying the enzymatic activity of S1PL has been carried out.

Keywords: S1PL, phosphorylated sphingolipids, luminogenic probe, luciferin, enzymatic activity