BRUTAL

Project title: Bean Resistance Using TAL effectors

Acronym: BRUTAL

Project duration: 36 months – Start date: 01/11/2017 End date: 31/10/2020

Key-words: Bean, disease resistance, Xanthomonas, TAL effectors

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Summary:

Context
The use of pesticides against crop bacterial diseases is very limited due to a lack of effective and non-toxic molecules. Thus, the most effective way to durably control bacterial pathogens is to combine prophylactic management with genetic selection of resistant cultivars. Bacteria from the genus *Xanthomonas* are responsible for Common bacterial blight of bean (CBB), the most devastating bacterial disease on bean.

Goals
The BRUTAL project aims at rapidly finding and deploying new sources of resistance to CBB. Our analyses will focus on characterizing novel functions targeted by *Xanthomonas* plant pathogens to promote virulence. A major goal of this project will be the construction of a battery of genome-edited bean plants carrying different resistances to CBB. These lines could then be used in seed mix and/or in rotation, enabling sustainable management of the disease.

Methodology
For this, we will analyse plant DNA regions targeted by TALs (Transcription Activator-Like) effectors injected in the plant cell by *Xanthomonas* bacteria. The diversity of these DNA regions will be analysed to search for natural sources of resistances usable by breeders. In parallel, we will modify these regions by genome-editing in bean cultivars and test if these modifications can lead to new resistances to CBB.