

SPLASH: SUSTAINABLE POLYMERS FROM ALGAE SUGARS AND HYDROCARBONS

Lolke Sijtsma and Maria Barbosa

Wageningen UR, Food & Biobased Research, P.O. Box 17, 6700 AA Wageningen, the Netherlands
E-mail: lolke.sijtsma@wur.nl; maria.barbosa@wur.nl

The 4-year SPLASH project will develop a new biobased industrial platform using microalgae as a renewable raw material for the sustainable production and recovery of hydrocarbons and (exo)polysaccharides from the species *Botryococcus braunii* and their further conversion to renewable polymers. The project comprises 20 partners of which 40% SME and several large corporates plus universities and research institutes.

Two bioproduction platforms will be explored: (i) green alga *Botryococcus braunii* on its own and (ii) the green microalga *Chlamydomonas reinhardtii*, to which the unique hydrocarbon and polysaccharides producing genes from *Botryococcus* will be transferred. SPLASH will deliver knowledge, tools and technologies needed for the establishment of a new industry sector: Industrial Biotechnology with algae and/or algal genes for the manufacture of polyesters and polyolefins. The building blocks for these polymers will be derived from the sugars (polyesters) and hydrocarbons (polyolefins) exuded by the algae: adipic acid from galactose, 2,5-furandicarboxylic acid from glucose, 1,4-pentanediol from rhamnose and fucose, ethylene from 'green naphtha' and propylene from 'green naphtha'. The conversion of ethylene and propylene to polyolefins is common technology, and will not be included in the project. The sugar-derived building blocks will be converted to new condensation polymers, such as e.g. poly(ethylene 2,5-furandioate) (PEF). End-use applications include food packaging materials and fibres for yarns, ropes and nets. The project encompasses: (1) development of *Botryococcus* as an industrial production platform, (2) systems biology analysis, (3) development of processes for production, *in situ* extraction and isolation, (4) product development. More detailed information including project partners and coordination can be found at www.eu-splash.eu

SPLASH receives funding from the European Community's Seventh Framework Programme (FP7) under the grant agreement No. 311 956.