Máster Universitario en Investigación Biomédica
Research Project Proposal
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TITLE
Development of new hepatoprotective and pro-regenerative molecules based on fibroblast growth factor 15/19 (FGF15/19) and amphiregulin (AR).

DEPARTMENT/LABORATORY
Laboratory of Biochemical Hepatology. Division of Hepatology and Gene Therapy. CIMA

DIRECTOR
Dra. María Ujue Latasa and Dr. Iker Uriarte Diaz-Varela (laboratory of Prof. Matías A Avila)

CONTACT
mulatasa@unav.es (948-194700, ext 4004).
iudiaz-vare@alumni.unav.es (p48-194700, ext 4008).
(Prof. Matías A Avila, maavila@unav.es; 948-194700, ext 4003)

SUMMARY
Currently there are no pharmacological strategies able to preserve the viability of the hepatic parenchyma and to foster liver regeneration. This lack of therapeutic resources becomes apparent in different clinical situations such as liver resection of primary and secondary tumors, living donor liver transplantation, or acute liver failure induced by toxins, viruses or alcohol, conditions that are aggravated in the fatty liver. A potential source of hepatoprotective molecules can be found in the mechanisms that mediate liver regeneration and the potent endogenous defence against liver injury, which therefore need to be better known. This project, the natural extension of our previous research, has two main aims: 1) Characterization of the hepatoprotective mechanisms triggered by the growth factors amphiregulin (AR) and fibroblast growth factor 15/19 (FGF15/19); 2) Development of new hepatoprotective molecules based on the fusion of AR and FGF19 with apolipoprotein A-I (ApoA-I), modification that confers hepatotropism and increases protein half-life. These objectives will be developed using transgenic mice available in our laboratory: AR and Fgf15 knockout mice (ARKO and Fgf15KO) and mice with hepatic overexpression of AR (ARTg). In these mice, and the corresponding controls, we will implement a series of clinically relevant experimental models of liver injury and regeneration. These models will also be used
to test the biological activity of the chimeric proteins FGF19/ApoA-I (Fibapo and Apofib), as well as those encompassing AR/ApoA-I (Arapo y Apoar), on which we have intellectual property.

Publications from the lab related to this Project:


**POSSIBILITY OF Ph.D. (YES/NO)**

Yes