



## MICROFLUIDIC FISH EMBRYO TEST CHIP



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## RESEARCH/TECHNOLOGY INTRODUCTION

We develop a microfluidic system designed for long-term **cultivation of fish embryos and toxicity screening**. It is based on the standard, widely used fish embryo test (FET) method, which is a very effective toxicity screening method because of its sensitivity, minimalized ethical issues, cost effectiveness, genetic similarity to humans and many other. **Our microfluidic device should bring improvement to this standard FET method by allowing at least partial automation and creating more reproducible cultivation and testing conditions thanks to continuous medium perfusion.**

The microfluidic system is being developed with CAD (computer aided design), combined with CFD (computational fluid dynamics) software. It is currently prototyped by DLP (digital light processing) 3D printing. Model toxicity tests are being executed as well as cultivations of fish embryos inside the microfluidic chip without toxicants. The current prototypes are for one use. Different manufacturing technologies are being considered for the final product, such as glass layer thermal bonding, that would allow construction of a microfluidic chip for repeated use.

## POTENTIAL USERS

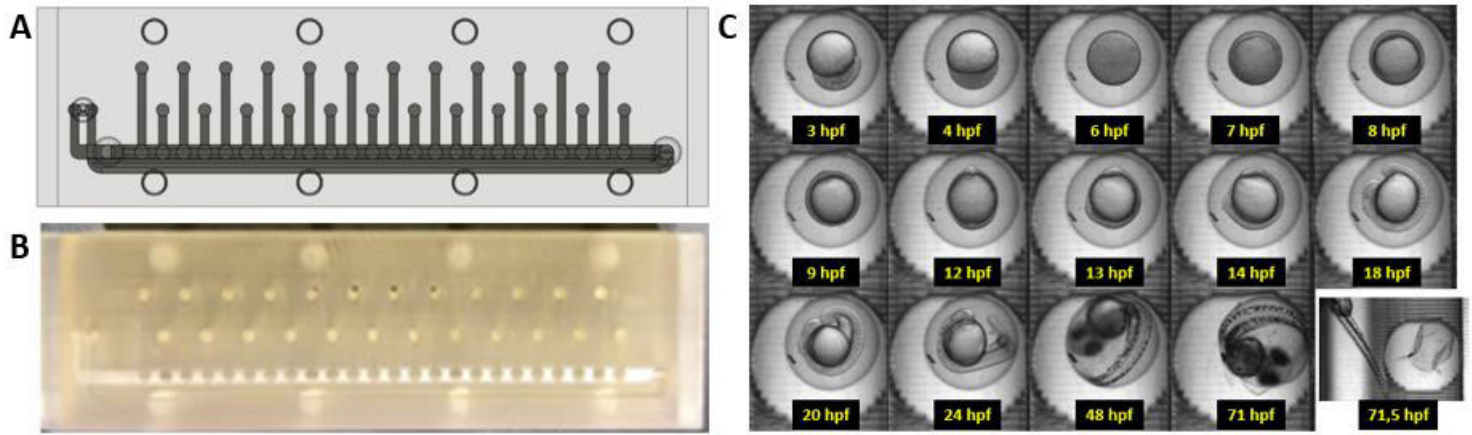
Anyone who needs to test toxicity and/or biological activity of substances.

## ADVANCEMENT OF TECHNOLOGY AND MARKET APPLICATION

The microfluidic chip could eventually replace the standard (static) FET test, which is being executed in commercial microtiter plates.



## ADDITIONAL INFORMATION



**Figure:** A – CAD model of the microfluidic chip (bottom view) B – 3D printed model of the chip (bottom view), C – development of single fish embryo inside the microfluidic chip (hpf = hours post-fertilization)