

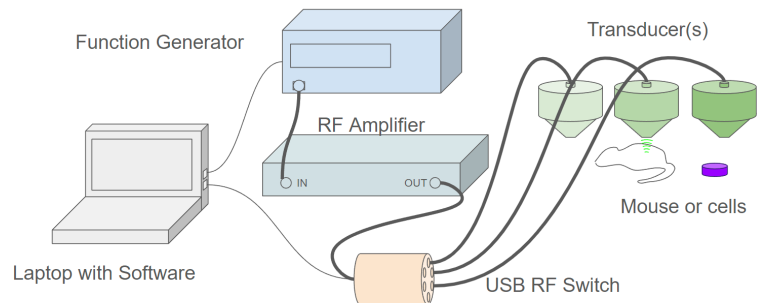
Preclinical Oncolysis Prototype

Overview

The Openwater Preclinical Oncolysis Prototype is designed to help researchers investigate the effect of different ultrasound parameters on a variety of *in vitro* and preclinical *in vivo* targets. Certain acoustic parameters may be well suited for damaging cancer cells while sparing surrounding healthy tissue, and this system is designed to systematically explore such effects in a laboratory setting.

Multiple focused ultrasound transducers are connected to a programmable signal generator through an amplifier and a switch to select which transducer is active. Samples are placed beneath the transducer(s), using 3D-printed coupling cones filled with water to make a path for the ultrasound and set the depth of the focal spot within the target. This system is compatible with *in vitro* targets held in standard 6-well plates as well as with mouse flanks, through the assistance of a stereotactic frame.

Controller software allows for configuration of treatment parameters through a simple GUI application. With its default settings, the system can be configured to output focused ultrasound from the parameters shown in the table to the right. This allows for investigation of treatment parameters both within and well above the safety levels used for diagnostic ultrasound imaging.



Parameter	Min	Max	Units
Frequency	70	1000	kHz
Output Voltage	0	843	V
Peak Negative Pressure	0	1*	MPa
Mechanical Index	0	3.8*	
ISPPA	0	100*	W/cm2
ISPTA	0	1000*	mW/cm2
Burst Length	2	40	ms
Duty Cycle	0.5	10	%
Treatment Duration	5	60 * 15	seconds

*These are the maximum values that can be set when using the parameter as the target. If the parameter is derived and not used as the target, it may exceed this range to reach another parameter's target value.

Getting Started

Additional information can be found in the following repositories:

- [opw_oncolysis_hw](#) - assembly/operation instructions, mechanical drawings, 3D models
- [opw_oncolysis_sw](#) - software to configure and operate the system
- [opw_oncolysis_data](#) - research data and experimental procedures

CAUTION - Investigational device. Limited by Federal (or United States) law to investigational use. This system has not been evaluated by the FDA and is not designed for the treatment or diagnosis of any disease. It is provided AS-IS, with no warranties. User assumes all liability and responsibility for identifying and mitigating risks associated with use