

## FACEMIRROR/SPECULAR FACE

*Computer software for the treatment of facial paralysis that is based on “mirror therapy”.*

### Description and main features

This technology can be used for the treatment of facial paralysis and consists in an imaging processing software that mirrors the healthy side of patient's face in real time, and overlaps a “healthy” image over the side of the face that is affected by the palsy such that patients can see an artificial image that is the closest to their normal. In essence, this software can track a patient's facial movement and record information, and generate an image that is displayed on a screen (computer, tablet...), and which shows both sides creating the illusion of a complete, symmetrical face. The first image displays the healthy side in real time, whilst the second one is a projection of the healthy side over the affected area, creating a specular image, making up the illusion of a whole, symmetrical face.

When patients are visually exposed to the image projected by the software and perceive their whole, healthy and symmetrical face, which generates a stimulus in their brain that allows cortical reorganisation and balances the intra-hemispherical neuronal network, leading to an improvement of motor function and sensitivity in the affected or paralysed side of patient's face. Consequently, patients are able to mimic or reproduce gestures, movements and exercises with the paralysed side of their face, with a higher accuracy and a significantly higher reproducibility compared with the results obtained when the image of their healthy side is not mirrored. It's been previously demonstrated that patients which are shown the mirrored healthy side, are able to generate adaptive movements, leading to a reduction of parafunctions and synkinesis (involuntary muscle movements, which usually accompany voluntary movements). In fact, a study led by our principal investigator shows drawdowns in the occurrence of synkinesis in these patients when they are shown the image generated by this technology based on the so-called “mirror therapy”. “Mirror therapy” is an advanced rehabilitation therapy that is used to treat many disease related processes that involve alterations in body and image perception by generating different stimuli in the brain. It works through the reactivation of the contralesional representation of the not reflected side of the body in the somatosensory and motor cortex.

### Competitive advantages

1. The deployment of this technology will be a major breakthrough and support to the rehabilitation treatments used for these patients at present. This tool is focused on clinical (diagnostic and therapeutic) and academic uses related with the treatment of these pathologies. The Project seeks for an innovative, simple and cost effective solution for patients and clinicians.
2. The scope of this solution is initially centred in facial paralysis, as the treatment of this pathology may be the most positively impacted by this technology and that is the most demonstrable for the affection of one side of the face with respect to the contrary side. However, this approach may be scalable to other pathologies such as chronic craniofacial alterations (unilateral chronic headache, chronic orofacial pain, post-surgical care...).

### Kind of collaboration sought

Cooperation is sought with any Party interested in partnering, licensing or investing in the technology, whether it be an investor to fund the project, a partner interested in getting involved in any of the various phases until its placement on the market, a patent licensee, etc. Organisations potentially interested in this technology are those within the pharmaceutical sector, hospitals, medical societies.

### Current stage of development

We are currently developing a prototype.

### Current state of intellectual/industrial property

Spanish Trade Mark nºM4022981, filed on 10/06/2019

### For further information, please contact

Innovation Unit  
Foundation for Biomedical Research of La Paz University  
Hospital (FIBHULP)-IdiPAZ  
Telephone number: +34 91 207 12 34  
e-mail: [innovacion@idipaz.es](mailto:innovacion@idipaz.es)  
Web: [www.idipaz.es](http://www.idipaz.es)