




## Clotilde Jumelle

31 years old

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I speak

English (Fluent)  
French (Native)



### EMPLOYMENT HISTORY

**2020 Freelance Consultant**, Kea Scientific, France.

Services: Regulatory Writing, Scientific Writing, Science Popularization, Consulting in experimental design and project management

**2018-2020 Postdoctoral Senior Scientist**, Dana Lab, Schepens Eye Research Institute, Mass. Eye and Ear, Harvard Medical School, Boston, MA, United States. **Mentor: Dr. Reza Dana, MD, MSc, MPH**

Projects: Development of light-sensitive drug-eluting biomaterials for management of ocular disorders

- Collaborated with UCLA-Department of Chemical and Biomolecular Engineering, Los Angeles, CA, United States,
- Designed and performed *in vitro*, *ex vivo* and *in vivo* experiments (polymer synthesis, cell and tissue culture, physical characterization, biocompatibility tests, immunostaining, ELISA, ocular surgery and imaging),
- Supervised and trained undergraduate and graduate students involved in experimental techniques and planning,
- Co-inventor of Patent (**see below**),
- Published peer-reviewed papers and presented results in international meetings (**see second page**),
- Composed grants and reports (data analysis and summary, budget, timeline, next milestones to be achieved).

**2015-2017 Postdoctoral Scientist**, Biology, Imaging and Engineering of Corneal Graft Laboratory, Saint-Etienne, France. **Mentors: Pr. Phillippe Gain, MD, PhD and Pr. Gilles Thuret, MD, PhD**

Projects: 1) Utilization of femtosecond laser for cutting and surfacing of corneal lamellar grafts. 2) Designing and Optimized storage media for use in corneal bioreactors.

- Collaborated with Huber Curien Laboratory and SISE-MANUTECH Excellence Laboratory, Saint-Etienne, France,
- Designed and performed *in vitro*, *ex vivo* and *in vivo* experiments (organ-culture, optimization of laser parameters, laser cutting of tissues, physical characterization, immunostaining, preparation of storage media, assessment of performance on human corneas).
- Supervised and trained undergraduate and graduate students involved in experimental techniques and planning,
- Co-inventor of Patent (**see below**),
- Published peer-reviewed papers and presented results in international meetings (**see second page**).

**2011-2012 Biomedical Engineer (Intern)**, Biology, Imaging and Engineering of Corneal Graft Laboratory, Saint-Etienne, France.

Projects: 1) Utilization of femtosecond laser for gene therapy of the corneal endothelium. 2) Repeatability assessment of corneal transparency and folding measures by transparometry.

- Bibliography, experimental developments, protocols, and report writing.



### PATENTS

- P. Gain, G. Thuret, C. Mauclair, **C. Jumelle**, G. Egaud (WO 2019). WO2020016270A1. **Device for holding corneal tissue for photon treatment thereof.**
- R. Dana, N. Annabi, **C. Jumelle**, E. Shirzaei Sani (Submitted). **Ocular sealants and methods of using the same.**



### Peer-reviewed Publications:

- **Jumelle C.**, Shirzaei Sani E, Taketani Y, Yung A, Gantin F, Chauhan SK, Annabi N, Dana R. [Growth factor-eluting hydrogels for treatment of corneal defects](#). Under review to Materials Science and Engineering C
- Khalil IA, Saleh B, Ibrahim DM, **Jumelle C.**, Yung A, Dana R, Annabi N. [Ciprofloxacin-loaded Bioadhesive Hydrogels for Ocular Applications](#). Biomaterials Science. 2020. doi.org/10.1039/D0BM00935K
- **Jumelle C.**, Gholizadeh S, Annabi N, Dana R. [Advances and limitations of drug delivery systems formulated in eye drops](#). J Control Release. 2020 Feb 3;321:1-22. doi: 10.1016/j.jconrel.2020.01.057.
- Guindolet D, Crouzet E, He Z, Herbepin P, **Jumelle C.**, Perrache C, Dumollard JM, Forest F, Peoc'h M, Gain P, Gabison E, Thuret G. [Storage of porcine cornea in an innovative bioreactor](#). Invest Ophthalmol Vis Sci. 2017 Nov 1;58(13):5907-5917. doi: 10.1167/iops.17-22218.
- **Jumelle C.**, Hamri A, Egaud G, Mauclair C, Reynaud S, Dumas V, Pereira S, Garcin T, Gain P, Thuret G. [Comparison of four methods of surface roughness assessment of corneal stromal bed after lamellar cutting](#). Biomed Opt Express. 2017 Oct 12;8(11):4974-4986. doi: 10.1364/BOE.8.004974.
- **Jumelle C.**, Garcin T, Gauthier AS, Glasson Y, Bernard A, Gavet Y, Klossa J, He Z, Acquart S, Gain P, Thuret G. [Considering 3D topography of endothelial folds to improve cell count of organ cultured corneas](#). Cell Tissue Bank. 2017 Jun;18(2):185-191. doi: 10.1007/s10561-017-9624-7.
- He Z, Forest F, Bernard A, Gauthier AS, Montard R, Peoc'h M, **Jumelle C.**, Courrier E, Perrache C, Gain P, Thuret G. [Cutting and Decellularization of Multiple Corneal Stromal Lamellae for the Bioengineering of Endothelial Grafts](#). Invest Ophthalmol Vis Sci. 2016 Dec 1;57(15):6639-6651. doi: 10.1167/iops.16-20256.
- **Jumelle C.**, Mauclair C, Houzet J, Bernard A, He Z, Forest F, Peoc'h M, Acquart S, Gain P, Thuret G. [Delivery of macromolecules into the endothelium of whole ex vivo human cornea by femtosecond laser-activated carbon nanoparticles](#). Br J Ophthalmol. 2016 Aug;100(8):1151-6. doi: 10.1136/bjophthalmol-2015-307610.
- **Jumelle C.**, Mauclair C, Houzet J, Bernard A, He Z, Forest F, Peoc'h M, Acquart S, Gain P, Thuret G. [Delivery of Molecules into Human Corneal Endothelial Cells by Carbon Nanoparticles Activated by Femtosecond Laser](#). PLoS One. 2015 Jul 2;10(7):e0132023. doi: 10.1371/journal.pone.0132023.

### Conference Proceeding:

- **Jumelle C.**, Mauclair C., Houzet J., He Z., Piselli S., Perrache C., Egaud G., Baubeau E., Gain P., Thuret G. [Pore size assessment during corneal endothelial cells permeabilization by femtosecond laser activated carbon nanoparticles](#). Medical Laser Applications and Laser-Tissue Interactions VII SPIE Proceedings (Optical Society of America, 2015), paper 95420W.

### Oral and Poster Presentations Presented at Academic Conferences (continued):

- **Jumelle C.**, Shirzaei Sani E, Taketani Y, Sun Z, Yung A, Annabi N., Dana R. [Optimized photopolymerizable hydrogel for sealing full-thickness corneal lacerations](#). Poster / Association for Research in Vision and Ophthalmology (ARVO) (May 2019, Vancouver, BC, Canada)
- Shirzaei Sani E., **Jumelle C.**, Kheirkhah A., Taketani Y., Dana R., Annabi N. [A bioadhesive hydrogel for sealing and treatment of corneal lacerations](#). 42nd Society for Biomaterials Annual Meeting and Exposition 2019: The Pinnacle of Biomaterials Innovation and Excellence.
- **Jumelle C.**, Mauclair C., Houzet J., Bernard A., He Z., Piselli S., Perrache C., Gain P., Thuret G. [Transfer of molecules into the endothelial cells of whole corneas using carbon nanoparticles activated by femtosecond laser](#). Poster / European Association for Vision and Eye Research (EVER) (October 2015, Nice, France)
- **Jumelle C.**, Mauclair C., Houzet J., Bernard A., He Z., Piselli S., Perrache C., Gain P., Thuret G. [Pore size assessment during corneal endothelial cells permeabilization by femtosecond laser activated carbon nanoparticles](#). Poster / European Association for Vision and Eye Research (EVER) (October 2015, Nice, France)
- **Jumelle C.**, Mauclair C., Houzet J., Bernard A., He Z., Piselli S., Perrache C., Gain P., Thuret G. [Pore size assessment during corneal endothelial cells permeabilization by femtosecond laser activated carbon nanoparticles](#). Oral communication / European Conferences on biomedical optics (ECBO) (June 2015, Munich, Germany)
- **Jumelle C.**, Mauclair C., Houzet J., Bernard A., He Z., Piselli S., Perrache C., Gain P., Thuret G. [Delivery of molecules in ex vivo corneal endothelium by femtosecond laser activated carbon nanoparticles](#). Poster / European Conferences on biomedical optics (ECBO) (June 2015, Munich, Germany)

## Oral and Poster Presentations Presented at Academic Conferences:

- He Z., Bernard A., **Jumelle C.**, Suffee N., Forest F., Pataia G., Courrier E., Piselli S., Perrache C., Peoc'h M., Gain P., Thuret G. **Bioengineering of endothelial grafts using decellularized femtosecond-cut corneal lamellae**. Oral communication / European Eye Bank association (EEBA) (January 2015, Venice, Italy).
- **Jumelle C.**, Suffee N., Forest F., He Z., Bernard A., Naigeon N., Nangoum-Fosso T., Perrache C., Peoc'h M., Gain P., Thuret G. **Influence of pressure on in vitro human corneal endothelial cells derived from human induced pluripotent stem cells (hiPSC)**. Poster / European Association for Vision and Eye Research (EVER) (October 2014, Nice, France)
- Gain P., **Jumelle C.**, Bernard A., Campolmi N., Baubeau E., Thuret G., Mauclair C. **Improvement of delivery of molecules into corneal endothelium using nanoparticles activated by femtosecond laser pulses**. Oral communication / European Society of Cornea and Ocular Surface Disease Specialists (EuCORNEA) (September 2014, London, United-Kingdom)
- **JUMELLE C.**, CAMPOLMI N., BERNARD A., HE Z., PISELLI S., MAUCLAIR C., GRANIER J., EGAUD G., GAIN P., THURET G. **Delivery of molecules into corneal endothelial cells by carbon nanoparticles activated by femtosecond laser: efficiency and toxicity quantification and long-term assessment**. Poster / European Association for Vision and Eye Research (EVER) (October 2013, Nice, France)
- **JUMELLE C.**, CAMPOLMI N., BERNARD A., PISELLI S., AUDOUARD E., GRANIER J., SODER H., MAUCLAIR C., GAIN P., THURET G. **Delivery of molecules into corneal endothelium using nanoparticles activated by femtosecond laser pulses: proof of concept**. Oral communication / European Eye Bank association (EEBA) (January 2013, Zagreb, Croatia)
- **JUMELLE C.**, CAMPOLMI N., BERNARD A., PISELLI S., AUDOUARD E., GRANIER J., SODER H., MAUCLAIR C., GAIN P., THURET G. **Delivery of molecules into corneal endothelium using nanoparticles activated by femtosecond laser pulses: proof of concept**. Oral communication / European Association for Vision and Eye Research (EVER) (October 2012, Nice, France)

## EDUCATION

**2016-2017** Inter university degree in **Clinical Trial interpretation**, Lyon University, France.

*Field of study: Interpretation of clinical studies and meta-analysis (statistics, bias, clinical coherence, and relevance, etc.).*

*Thesis: Efficacy and safety assessment of Lifitegrast 5% for patients with dry eye syndrome.*

**2012-2015** **PhD in Molecular and Cell Biology**, Biology, Imaging and Engineering of Corneal Graft Laboratory, Saint-Etienne, France.

*Thesis: Delivery of molecules into the corneal endothelium by carbon nanoparticles activated by a femtosecond laser.*

**June 2013** Inter university degree in **Animal Testing**, Lyon University, France.

*Field of study: Conventional and transgenic models for biomedical research.*

**2011-2012** **M.Sc. in Cell and Tissue Engineering**, Franche-Comté University, France.

*Field of study: Biotechnologies, immunology, stem cells, biomaterials.*

**2009-2012** **Engineer's Degree in Biomedical Engineering**, Superior institute for Biomedical Engineering, Franche-Comté University, Besançon, France. *Field of study: Mechanics, electronics, pharmacology, medicine.*

**2007-2009** **Preparatory Classes for "Grandes Ecoles"**, Arras, France.

*Fields of study: Biology, chemistry, physics and earth sciences.*



## TEACHING

**2015-2016** 1-hour annual class about biophotonics using femtosecond pulses (for Telecom engineer students)

**2013-2014** 1-hour annual class about gene therapy of the corneal endothelium (for M.Sc. Biology student)



## VOLUNTEERING

**2019-2020** Chair of the Social Committee of Boston Postdoc Association (BPDA), Boston, MA, United States.

**2012-2014** Chair of the Saint-Etienne PhD student Association (ASEC), Saint-Etienne, France