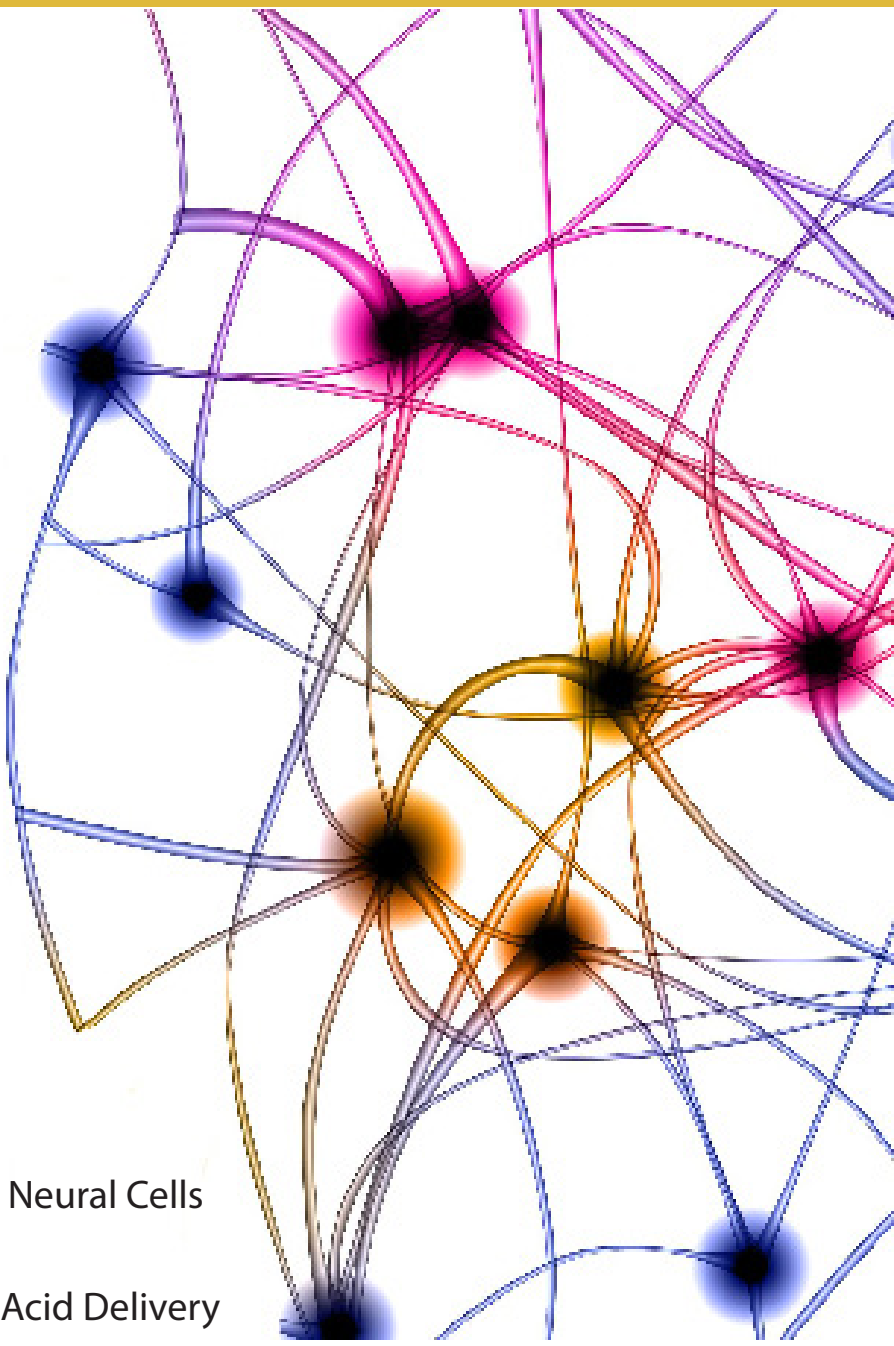
OZBIOSCIENCES
The art of delivery systems

In Vitro Transfection
In Vivo Gene Delivery



Primary Neurons and Neural Cells
Microglial Cells
Brain: *In vivo* Nucleic Acid Delivery

Neuroscience Applications

MICROGLIAL
NEURONS
BRAIN

A broad range of solutions for

TRANSFECTION SOLUTIONS - Move forward with confidence

IN VITRO TRANSFECTION

Magnetofection™ technology reagents

NeuroMag

- High transfection efficiencies in primary neurons
- Efficient from 1 DIV to 22 DIV
- High transfected neurons viability
- Long transgene expression (up to 7 days)
- Suitable for all types of nucleic acids

Glial-Mag

- Designed for transfection of microglial cells
- Low nucleic acid amount - minimized toxicity
- High level of nucleic acid compaction
- Easy and straightforward protocol
- Compatible with any culture medium

IN VIVO NUCLEIC ACIDS DELIVERY

Biodegradable nanoparticles-based reagent

BrainFectIN™

- Efficient transfection reagent for nucleic acids delivery into the CNS
- Targeting of specific regions
- Reduction of the injected volume
- Reduced DNA doses
- Minimized toxicity
- Low immunogenicity
- Rapid & long-term transgene expression

Glial-Mag NEW!

Glial-Mag transfection reagent is a new powerful formulation for delivery of nucleic acids into microglial cell lines and primary microglia.
Glial-Mag kit is the association of a specific magnetic nanoparticles formulation (Glial-Mag reagent), issued from our Magnetofection™ technology and a booster (Glial-Boost) that enhances efficiency.

- For transfection of microglial cells line such as BV2, N9, N13, HMO6, MG-5, SIM-A9 and primary microglia
- Can be used for transient and stable transfection

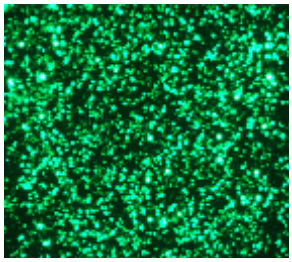


Figure 1: BV2 transfected with pVectOZ-GFP using Glial-Mag.

Microglial Cells Transfection Efficiency with Glial-Mag

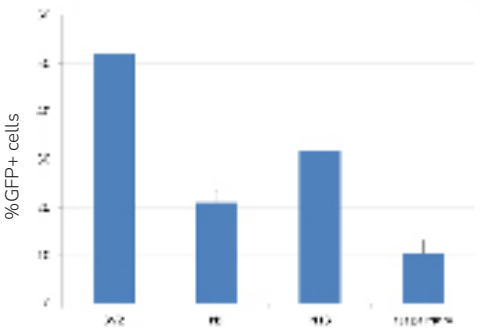


Figure 2: BV2, Rat Primary, N9 and N13 cells were transfected with Glial-Mag. After 24h, GFP+ cells were analyzed by Flow cytometry.

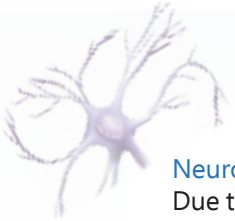
«We are using the BV2 microglia cell line and have difficulties in transfecting those cells [...]. The transfection worked well with Glial-Mag and I did not observe cell death.» *Math. C. - Karolinska Institutet - Stockholm - Sweden*

Magnetofection is superior to other chemical transfection methods in a microglial cell line. *Smolders et al, Journal of Neuroscience Methods. 2017*

Effective knockdown of gene expression in primary microglia with siRNA and magnetic nanoparticles without cell death or inflammation. *Carrillo-Jimenez et al, Frontiers in Cell Neuro. 2018*

MAGNETOFECTION™

Neuroscience Applications



MAGNETOFECTION™

NeuroMag

NeuroMag is the first dedicated transfection reagent for primary neurons and neural cells.
Due to its unique properties, NeuroMag allows to follow the maturation of transfected neurons during several days after transfection.

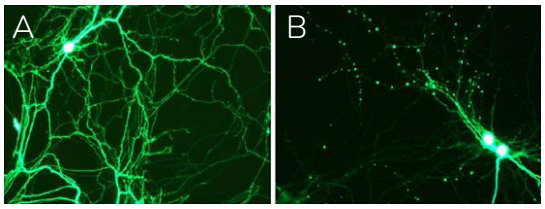


Figure 3: Primary rat hippocampal neurons 3 days after transfection. A) transfected with Neuromag B) transfected with Lipofectamine 2000

Successfully tested and published!

- Hippocampal & Cortical Neurons
- Motor Neurons
- Oligodendrocytes
- Dopaminergic
- Glioblastoma & Neuroblastoma
- Neural Stem Cells
- Dorsal Root Ganglion....

«High transfection efficiency on primary dopaminergic neurons at 21 DIV.» *Underhill SM et al, Neuron. 2014*

«Due to its high efficiency and its low toxicity, we used NeuroMag to transfect cortical neurons to study the role of SRGAP2A protein in the regulation of spine morphology.» *Charrier C et al, Cell. 2012*

«Transfection efficiency of primary cortical neurons was in the range of 20–30% for overexpression, and 10–15% for TDP-43 knockdown experiments.» *Chou C.C. et al, Nature Neuroscience. 2018*

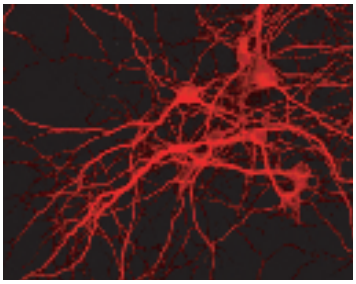
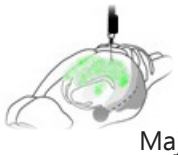


Figure 4: Primary cortical neurons 2 days after transfection with NeuroMag



IN VIVO DELIVERY

NEW!

BrainFectIN™

Major difficulties with gene delivery in the central nervous sytem is the weakness of standard non-viral gene carriers and the limitations associated to the use of viral particles (time-consuming and requires additional safety precautions).
Unlike these methods, BrainFectin™, an original non-viral formulation, enables safe, easy and efficient nucleic acids delivery into central nervous system of small animal.

«BrainFectIN™ allows transfection of neural cells in specific brain area following stereotaxic injection.»
Immunochemistry with an antibody directed against GFP was performed in order to increase the signal.

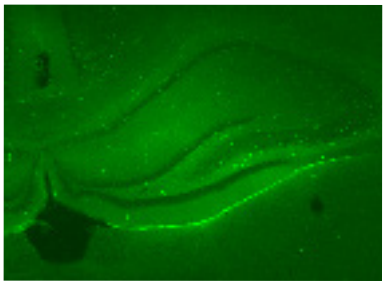


Figure 5: GFP expression in hippocampus of rat 48h after BrainFectIN™/pGFP injection shows an efficient transfection rate of neural cells in all areas of hippocampus.

«GFP expression is detected in ipsi and contra-lateral hippocampus of young rats injected with BrainFectIN™/pGFP complexes 3 weeks after injection.»

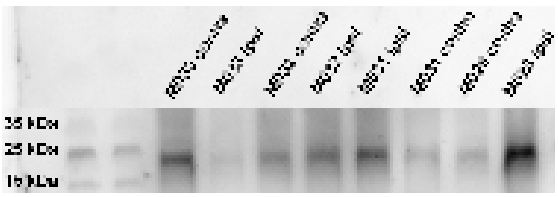


Figure 6: Quantitative analysis of GFP expression in hippocampus of rat transfected with BrainFectIN™/pGFP. 3 weeks after surgery - Western blot analysis was performed and GFP expression was detected (27 kDa).

Complementary products :

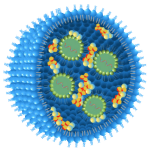
pVectOZ Transfection Plasmids :

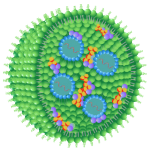
OZ Biosciences proposes five expressions vectors encoding for the most popular reporter genes (**CAT, GFP, LacZ, Luciferase, SEAP**). They are engineered in an optimized backbone and are ideal for all transfections.

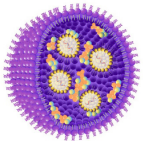
Ready to use mRNA :

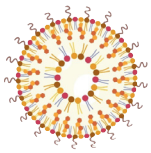
OZ Biosciences offers mRNAs that mimic fully processed mature mRNAs. These mRNAs are stabilized with **5' Cap 1** structure and **3' poly(A) tail** and are optimized to yield improved stability & performance. They can be modified with **5-methoxyuridine** or **N1-methyl-pseudouridine** to reduce innate immune responses. We also offer **unmodified mRNAs.**

Ready to use Lipid NanoParticles :


NanOZ LNP mRNA(GFP)


NanOZ LNP mRNA(Luc)


NanOZ LNP mRNA(OVA)


NanOZ empty-LNP

Custom services for mRNA and LNP :

Our platforms can produce custom mRNA according to your needs and preferences, and encapsulate them into LNP with the formulation of your choice.
Fill out the form on our website and we will get back to you with a quote !

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The art of delivery systems

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