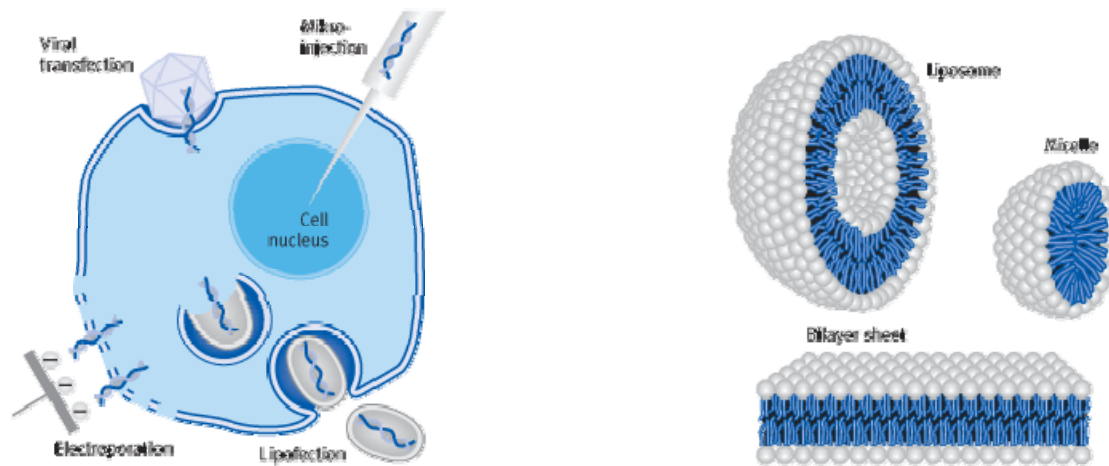


# Transfection

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In cell biology, transfection is the term given to the introduction of foreign genetic material into eukaryotic cells. In addition, the distinction is made between temporary introduction into the host cell (transient transfection) and permanent integration into the genome (stable transfection). The process of transfection basically corresponds to that of bacterial transformation, albeit under a different name.



## Transfection methods

A variety of methods are used to introduce genetic material into eukaryotic cells: Viral transfection uses genetically modified viruses which are no longer pathogenic and carry the gene to be introduced. In this method problems include the frequently non-directional stable integration of the gene into the genome of the host cell, the laborintensive production of the viruses and the strong immunological response.

Physical methods such as electroporation or microinjection are cost-intensive and of limited use in routine procedures. Chemical methods include calcium phosphate precipitation, transfection using cationic polymers and - among the most efficient methods – lipofection. Our areas of core competency are in the field of lipofection using cationic lipids. Our products provide users with the optimum technology for their transfection assays in each case.

## Transfection with cationic lipids

In aqueous solutions, cationic lipids form vesicles with a bilayer lipid sheet, known as liposomes. When liposomes encounter nucleic acids they re-form into nucleic acid lipid complexes called lipoplexes which can be actively taken up by eukaryotic cells by means of endocytosis. In this case, the lipoplex enters into the cell cytosol via the endosomes<sup>1</sup>.

The endosomal structure is destroyed by increasing the osmotic pressure created by the lipids' buffering action within the endosomes and by the fusion of the lipid with the endosomal membrane. The ability of a lipid to destroy endosomes is one of the main characteristics of a transfection reagent. Our METAFECTENE<sup>®</sup> transfection products based on the core product METAFECTENE<sup>®</sup> (cat. no. T020) feature structural elements designed to optimally promote precisely these properties (RMA technology).

DNA which is introduced into the cell cytosol cannot penetrate the membrane of the cell nucleus ("nuclear barrier"). Access to the nucleus is thus only possible if the nuclear membrane dissolves during mitosis. For this reason, the cell division rate is critical in DNA transfection and must be as high as possible for efficient transfection.

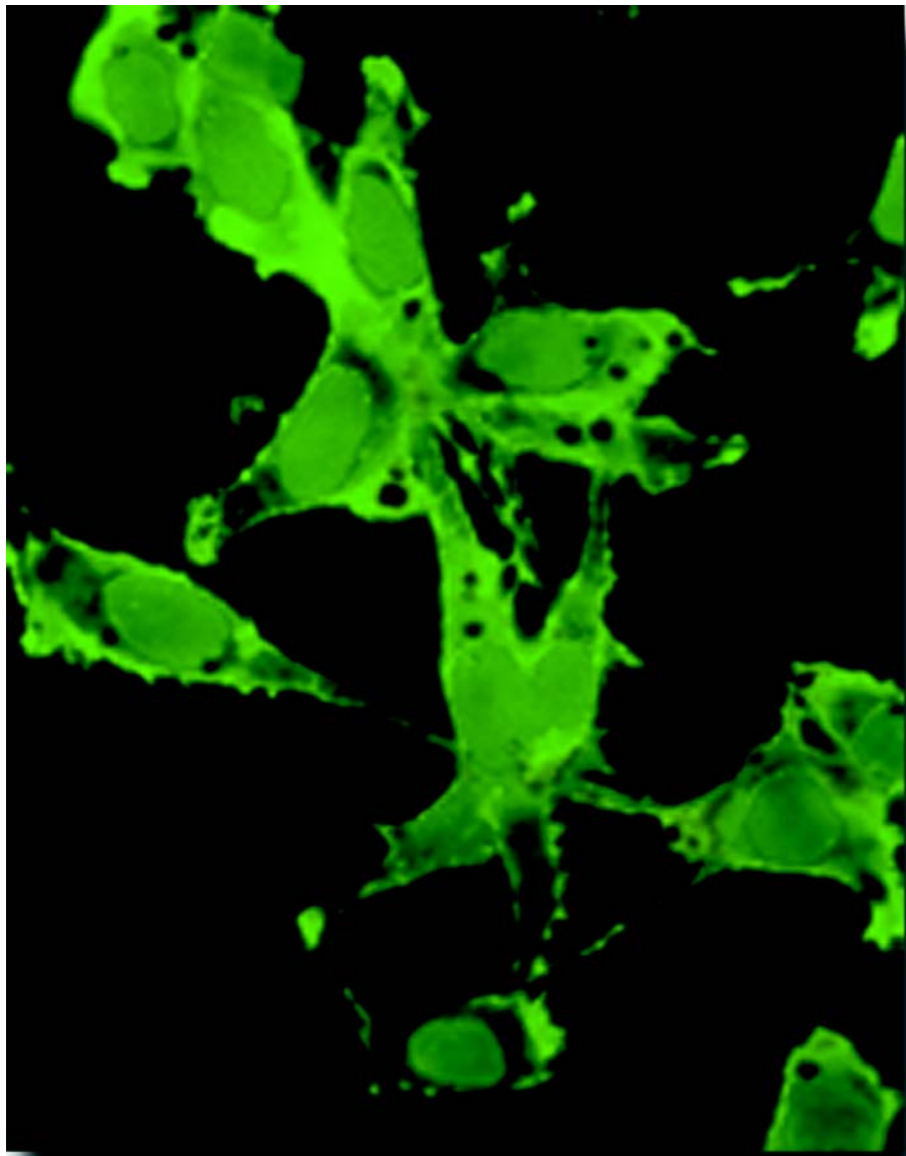
Another key criterion for successful transfection is the toxicity of the reagent – and thus the condition of the cells. We have set new standards in this area by introducing TOP technology as a constituent of our transfection reagents since our development of METAFECTENE<sup>®</sup> PRO (cat. no. T040).

Transfection is a complex process in which the lipoplex volume or proportion of genetic material in relation to transfection reagent must be precisely optimized for each cell type. The numerous optimization stages required to achieve satisfactory levels of transfection efficiency are extremely timeconsuming and require large volumes of reagents and other substances – a not inconsiderable cost factor. Now Biontix has developed FEE technology and incorporated it into METAFECTENE<sup>®</sup> EASY (cat.no. T090), the first third-generation transfection reagent. This reagent is used in a single predefined quantity, thus saving time, effort and costs while delivering excellent transfection results.

Whether users seek a reagent to maximize transfection efficiency, aim to generate results in the shortest possible time without the need for optimization or prefer to use a reagent proven many times over in practice, our product range supplies the ideal reagent for their individual needs and requirements.

# **Biont***ex*

*The Transfection Company*



**Biont**ex is a specialist in the field of transfection technology. Transfection means to deliver genes or DNA to eucariotic cells. Biont

ex researches this key step of gene technology in respect of complete synthetically manufactured carrier systems (i.e. transfection reagents). Simple equipment, easy handling, high efficiency, low healthy risks (in contrast to viral systems), no restriction with regard to sort and size of DNA, applicability in vitro and in vivo are unique combined properties of these transfection reagents, which are valuable tools for research and manipulation of physiologic processes of cells by gene transfer.

Biont

ex, an established innovative, biotechnologically orientated company, has developed new synthetical products based on cationic lipids for transfection technology. (e.g. **RMA**-Technology: **R**epulsive **M**embrane **A**cidolysis)

These new transfection reagents, **METAFECTENE** and **INSECTOGENE**, are drafted to satisfy criteria of best metabolizability and minimum of toxicity. **METAFECTENE** is highly effective for transfection of mammalian cells, **INSECTOGENE** is highly effective for gene introduction into insect cells. Biont

ex offers additionally **DOTAP**, a well established transfection reagent.

[Biont

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# METAFECTENE™



## The High Efficient RMA-based Transfection Reagent for Mammalian Cells

Biont has developed a new class of polycationic transfection reagents based on **RMA-Technology**. (**R**epulsive **M**embrane **A**cidolysis). The specifically designed molecular structure of cationic lipids ensures following processes:

- Easy entry of genetic material into cells by condensing DNA to compact structures.
- Endosome buffering for osmotic destruction (proton sponge properties).
- Destabilisation of the DNA-coated lipid membrane by repulsive electrostatic forces in weakly acidic environment.

This combination of properties is unique in the area of synthetic transfection reagents. RMA-based lipids are a prerequisite for optimum proper transcription and translation. The high efficiency of **METAFECTENE** makes it a valuable tool for gene delivery or gene transfer experiments and fits perfect for siRNA applications.

### Assortment of cells successfully transfected with METAFECTENE

|          |         |
|----------|---------|
| CV-1     | Hep-G2  |
| AM-C6SC8 | COS-7   |
| A-549    | HT 29   |
| CHO      | A-293   |
| A-431    | Jurkat  |
| BHK-21   | 293     |
| HeLa     | PC-12   |
| MCF-7    | HeLa-S3 |
| J-774    | Vero    |
| NIH-3T3  | BMS-2   |
| BHK      | ECV-304 |

### Primary Cell Types

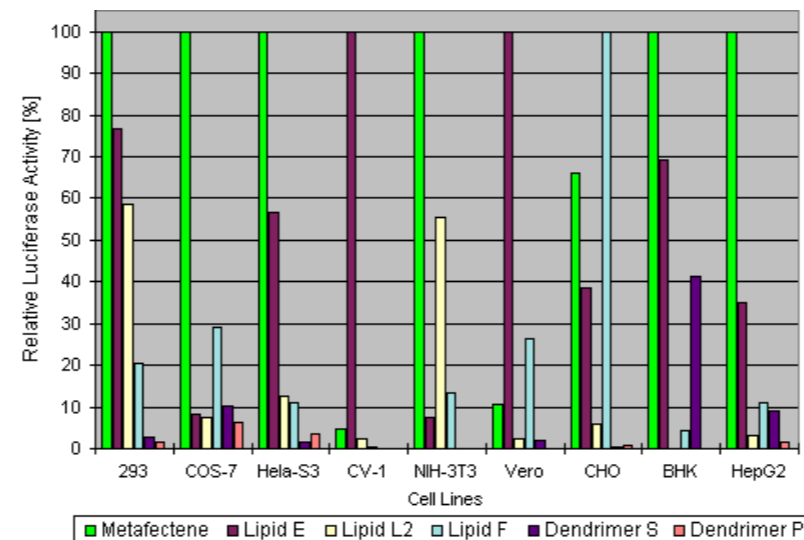
|                             |
|-----------------------------|
| AG06234C                    |
| Rat liver hepatocytes       |
| Porcine smooth muscle cells |

For a complete list see Metafectene page under <http://www.biont.com>

### Special Highlights of METAFECTENE

- No serum inhibition
- Extremely efficient with low DNA amounts
- Broad peak performance
- Excellent reproducibility
- Very broad cell line range
- Low toxicity
- Very easy one-step procedure
- Best results with siRNA applications □□

### Comparison of METAFECTENE with other well known transfection reagents

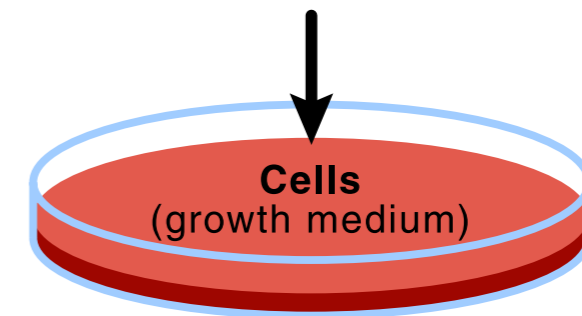


## Extreme fast and easy procedure with METAFECTENE

**METAFECTENE** (diluted in serum-free medium)      **DNA** (diluted in serum-free medium)



**Combine & Incubate**  
10 - 20 min

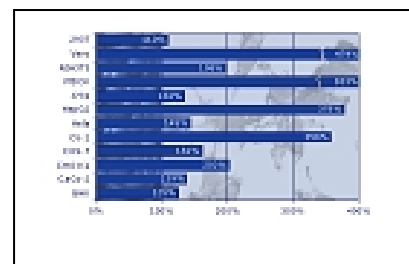
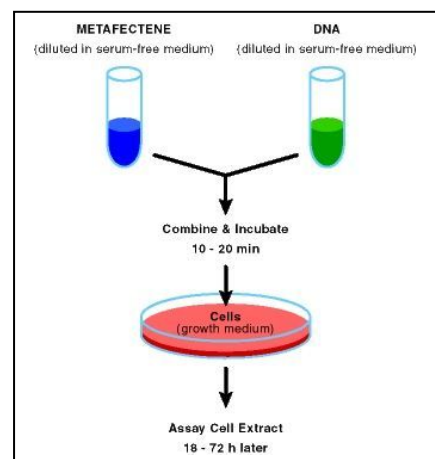


**Assay Cell Extract**  
18 - 72 h later

# Listino prezzi Biontex/Duotech

## Metafectene® & MetafectenePRO®

| #° Cat.  | Descrizione  | Pr. iva escl. |
|----------|--|---------------|
| T020-0.5 | <b>METAFACTENE™ 0,5 ml</b><br>Transfection Reagent for Mammalian Cells       | € 130,00      |
| T020-1.0 | <b>METAFACTENE™ 1 ml</b><br>Transfection Reagent for Mammalian Cells         | € 220,00      |
| T020-2.0 | <b>METAFACTENE™ 2 x 1 ml</b><br>Transfection Reagent for Mammalian Cells     | € 370,00      |
| T020-5.0 | <b>METAFACTENE™ 5 x 1 ml</b><br>Transfection Reagent for Mammalian Cells     | € 760,00      |
| T040-1.0 | <b>METAFACTENE™ PRO 1 ml</b><br>Transfection Reagent for Mammalian Cells     | € 260,00      |
| T040-2.0 | <b>METAFACTENE™ PRO 2 x 1 ml</b><br>Transfection Reagent for Mammalian Cells | € 460,00      |
| T040-5.0 | <b>METAFACTENE™ PRO 5 x 1 ml</b><br>Transfection Reagent for Mammalian Cells | € 990,00      |



### Condizioni di fornitura :

1. Trasporto : Euro 20,00
2. Iva : Escl. e a Vs carico
3. Disponibilità : Pronta, salvo venduto

Duotech.2012