

**PLURYAL HAIR DENSITY**  
THE HAIR BIOSTIMULATOR

**YOUR MOST BEAUTIFUL AGE IS NOW!**

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BEAUTIFUL  
AGE IS NOW!**

# MD SKIN SOLUTIONS LABORATORIES

AT A GLANCE

2<sup>ND</sup> GENERATION FAMILY BUSINESS

13

YEARS

15M

TREATMENTS

70

COUNTRIES

# PLURIAL INJECTABLES

REVIVING SELF-CONFIDENCE

THE WIDEST RANGE OF INJECTABLES ON THE MARKET

08

FILLERS

04

DENSIFIERS

02

INTIMATES

04

TECHNOLOGIES

# OUR SCIENCE IS EXCELLENCE

Pluryal is actively focused on promoting individual and natural standards of beauty that improve one's look whilst preserving their identity as it firmly believes that every person should feel self-confident and beautiful at any age. Pluryal is committed to innovation and dedicates a significant percentage of its yearly revenues to R&D in order to develop cutting-edge solutions that promote the "Pro-Aging" revolution and provide patients with comprehensive treatments that not only improve the skin, but also the hair and body.

**Pluryal releases an innovative concept of densifiers, a brand new generation of injectable devices designed to treat the skin (face and body), the hair and intimate areas.**



# CATEGORIES OF PLURYAL INJECTABLES

FILLERS, DENSIFIERS & INTIMATES  
(ESSENTIALS/PN/BIO/LIDOCAINE)

## FILLERS

### Essentials:

Booster  
Classic  
Volume

### Bio:

Bioclassic  
Biovolume

### Lidocaine:

Classic Lidocaine  
Volume Lidocaine  
Contour Lidocaine

## DENSIFIERS

### PN:

Silk  
Densify

### Hair Density

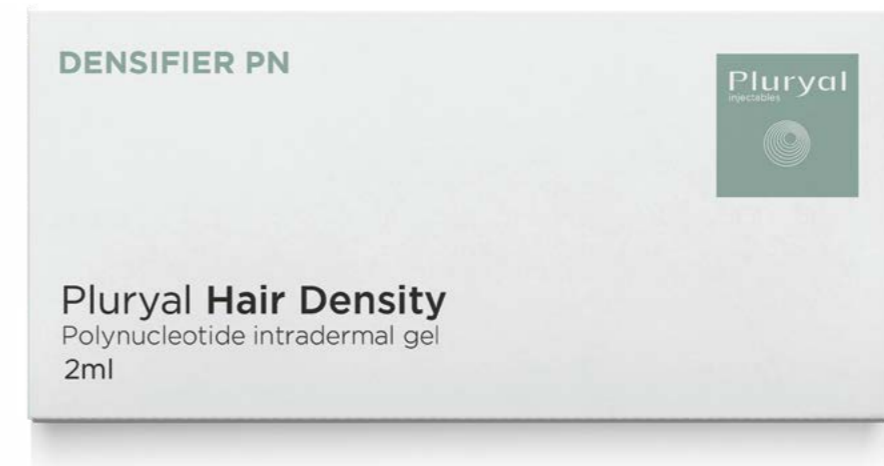
### Bio:

Biosculpture

## INTIMATES

### Bio:

Biointimate  
Biointimate Volume



# PLURYAL HAIR DENSITY

REBUILDS & STRENGTHENS THE HAIR

## PLURYAL DENSIFIERS: AN INNOVATION

Pluryal innovates by bringing to the industry the FIRST range of “beauty densifiers” that:

1. Durably and efficiently repairs the skin and hair.
2. Is manufactured in Europe in compliance with EU regulations and EC certification.
3. Uses innovative, patented and unique technologies based on two main actives: highly purified polynucleotides and hyaluronic acid.
4. Offers comprehensive solutions to tackle all skin and hair problems, even in the most delicate areas.



## WHY A HAIR PRODUCT?

Alopecia is a major problem affecting most men starting the age of 20 and active women starting the age of 30. As hair remains an important beauty attribute that directly impacts self-confidence, patients' requests for hair treatments that address hair fall are rising globally. Practitioners have witnessed an increasing demand with the arrival of the PRP treatments. However, not all patients are willing to undergo such a heavy, multiple-step treatment requiring a considerable number of sessions to deliver the desired results.

On a path of constant innovation, MD Skin Solutions has elaborated a product to regenerate the hair follicles and stimulate hair growth; a ready-for-use solution that offers an easy and quick treatment as well as an increased level of comfort for both patients and practitioners.

## WHAT IS A HAIR DENSIFIER?

Pluryal® HAIR DENSITY is a hair densifier, composed of highly purified and totally degradable polynucleotides, extracted from salmon milt.

Polynucleotides are well-known for their skin and hair biostimulating effect and have been safely used for over two decades in regenerative medicine. Pluryal® HAIR DENSITY harnesses their regenerative power to nourish the hair follicles, strengthen the scalp and increase the hair number and diameter.

# HPN TECHNOLOGY

A REGENERATIVE INNOVATION

## HPN TECHNOLOGY: AN EXCLUSIVE PRODUCTION PROCESS OF PHARMACEUTICAL GRADE

1. PN of pharmaceutical grade.
2. Patented manufacturing process of pharmaceutical standard.
3. Control of every step of the production process, from raw material to finished product.
4. High temperature purification (to remove any trace of protein and guarantee the absence of inflammatory reactions) and sterilization.
5. ISO 13485 certification.

**Pluryal® HAIR DENSITY is an injectable medical device based on the HPN technology.**



# POLYNUCLEOTIDES

## ABOUT

1. Biopolymers composed of nucleotide monomers, extracted from salmon milt, highly purified, non-allergenic and fully absorbable.
2. This extract is composed of a mixture of deoxyribonucleotide polymers with chain lengths between 50 and 2,000 base pairs. It is also a source of deoxynucleosides, purines and pyrimidines, and deoxyribonucleotides.
3. Extracted from salmon milt and obtained from a fraction of DNA of different chain lengths (molecular weight from 80 to 2,000 kDA) close to the human DNA.
4. Our DNA is formed from this kind of molecules, making them very important molecules for our body's functioning.
5. They have the ability to repair the skin and **stimulate hair growth**.

## WHAT MAKES THEM UNIQUE?

Compatible, biodegradable and natural polynucleotides are known for their **total skin and hair regenerative effect**.<sup>[1,2]</sup>



# POLYNUCLEOTIDES

## A REGENERATIVE ACTION

POLYNUCLEOTIDES INCREASE



## EFFECTS

### HOW DOES PLURYAL® HAIR DENSITY WORK?

Polynucleotides stimulate cell growth as well as the metabolism and regeneration of different cell lines. These trophic stimuli in the hair follicles promote hair growth.

#### 1. HYDRATE THE SCALP<sup>[3]</sup>

Polynucleotides have the ability to bind with water molecules and create a three-dimensional (3D)-gel.  
→The gel has a trophic effect: it deeply nourishes and hydrates the skin of the scalp.

#### 2. DENSIFY THE SCALP BY STIMULATING THE COLLAGEN<sup>[4,5,6]</sup>

Polynucleotides stimulate the growth of fibroblasts, which synthesize elastin fibers, collagen, HA, growth factors, and other proteins of the extracellular matrix. They strengthen the scalp.  
→ When the scalp is firmer and healthier, hair loss is attenuated.

#### 3. IMPROVE THE MICROCIRCULATION<sup>[7]</sup>

Polynucleotides enhance tissue oxygenation by promoting the creation of new capillaries (angiogenic effect) and stimulate the microcirculation, vascularity and blood flow in existing ones.  
→The improvement of microcirculation in the scalp contributes to nourish hair bulbs by supplying the nutrients and oxygen necessary for their growth. It also strengthens hair and stimulates its rapid growth.

#### 4. PROTECT THE SKIN<sup>[8,9,10]</sup>

Polynucleotides protect against free radicals by Scavenger effect. They can combine with free radicals and block their hair and scalp damaging effect. Besides, they have powerful anti-inflammatory effects as they reduce various inflammatory cytokines while increasing anti-inflammatory cytokines.

#### 5. REACTIVATE THE HAIR GROWTH<sup>[11,12,13,14]</sup>

Polynucleotides generate nucleotides and nucleosides that can contribute to DNA formation thereby stimulating cell growth and the metabolism and regeneration of different cell lines.

# NOURISHES AND BIO- REVITALISES THE SCALP STIMULATING HAIR REGROWTH

## ADVANTAGES

1. Boosts new hair appearance
2. Aims to thicken hair
3. Effective for scalp, eyebrows and beard
4. No social eviction
5. Safe: very high tolerance, biocompatible, natural and fully absorbable active ingredient



# PLURYAL HAIR DENSITY

## FORTIFIES & STIMULATES

PLURYAL® HAIR DENSITY is a viscoelastic, non-pyrogenic sterile polynucleotide gel for single use in a pre-filled syringe of 2ml.

Polynucleotides Concentration: 15mg (7.5mg/ml)

Sterilization: Steam

Main Action: Nourishes hair follicles and strengthens the scalp. Increases hair number and diameter

Target Age Group: Starting the age of 20

Injection Technique: Microdroplet technique

Injection Level: Deep dermis

Pack Contents: 1 x 2ml syringe | 2 x 30G<sup>1/2</sup> needles

Regulatory: Syringe (CE 0373, MD Skin Solutions) | Needles (CE 0318, BD)

### TREATMENT FREQUENCY

Hair loss types	Starting Treatment	Maintenance treatment
Androgenic alopecia (men/women)	1 session every 1/2 weeks for a total of 4 sessions followed by 4 sessions performed at 3 to 4-week intervals.	Repeat the course every year
Telogen effluvium	1 session every 3 weeks for a total of 4 sessions	Repeat the course after 6 months if necessary
Weakened hair / fiber thinning		
Post COVID-19 alopecia		
Post pregnancy / birth		
Adjuvant therapy post-hair transplantation	1 session every 3 weeks for a total of 3 sessions	Repeat the course after 6 months if necessary
Adjuvant therapy LED/PRP		
Beard (lack of density)		
Eyebrows (lack of density)		

# PLURYAL HAIR DENSITY

## FORTIFIES & STIMULATES

### WHO IS A CANDIDATE FOR PLURYAL HAIR DENSITY?

Pluryal® HAIR DENSITY is designed to nourish hair follicles and strengthen the scalp.

Everyone can benefit from this treatment, but mainly patients with the following indications:

- **Eyebrows and beard: lack of density**

- **Scalp issues:**

1. Telogen effluvium
2. Hair thinning
3. Hormonal alopecia in women (including androgenetic)
4. Androgenetic alopecia in men
5. Post-pregnancy (local loss)
6. Post-COVID19 Alopecia
7. Adjuvant therapy: LED light, PRP (autologous platelet-rich plasma)
8. Adjuvant therapy after hair transplantation

### TARGET AREAS



Scalp



Eyebrows



Beard



**FORTIFY THE HAIR AND  
STIMULATE ITS GROWTH  
WITH PLURYAL® HAIR DENSITY**



# CLINICAL PROVEN PERFORMANCE

## STUDY #1

A Clinical study conducted by Lotti et al.<sup>[15]</sup> on 20 patients treated for hormonal alopecia confirmed that the trophic stimulation performed by Polynucleotides (15mg/syringe) in the scalp **promoted the growth of hair**. This clinical investigation also confirmed the safety of the medical device and its good tolerability as **no side effects were recorded**.

As shown in the tables provided, we obtained a marked improvement of the the efficacy of Pluryal® HAIRDENSITY is clinically proven:

### Pull test (Fig. 1)

#### Step #1

The clinician grabs a small section of hair, around 50 to 60 hairs and holds the strands close to the scalp between the thumb, index finger and long finger.

#### Step #2

The clinician then firmly pulls on the strands using slow traction as the fingers slide down the hair shaft, avoiding a fast and forceful tug. The hair pulls are performed at the vertex, 2 parietal areas, and the occipital area of the scalp.

#### Step #3

Next, the pulled hairs are counted. If more than 10% of the hairs in each strand are removed from the scalp area, the hair pull test is considered positive. If fewer than 10% are removed, then the hair loss can be attributed to normal shedding.

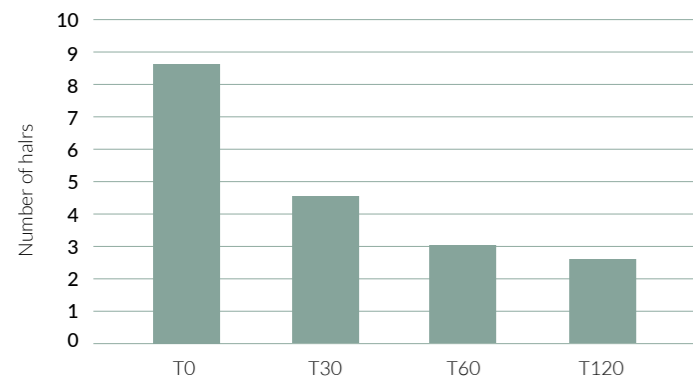


Fig. 1  
Results of pull test evaluations at baseline (T0) and after 1 month (T30), 2 months (T60), 4 months (T120)

### Trichogram (Fig. 2 & Fig. 3)

The trichogram is a microscopic examination of the hair roots. The examination is based on three criteria: the proportion of hair growth phase (anagen), rest (catagen), death (telogen) or dystrophic (lesions of the hair matrix) on the frontal, temporal and occipital zones of the head, the proportion of anagenic hair compared to the proportion of telogen hair and the diameter of the hair shafts.

# CLINICAL PROVEN PERFORMANCE

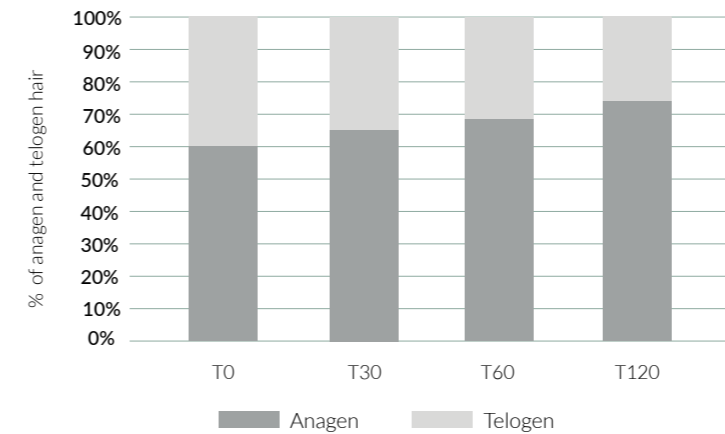


Fig. 2  
Results of Trichogram evaluations at baseline (T0) and after 1 month (T30), 2 months (T60), 4 months (T120)

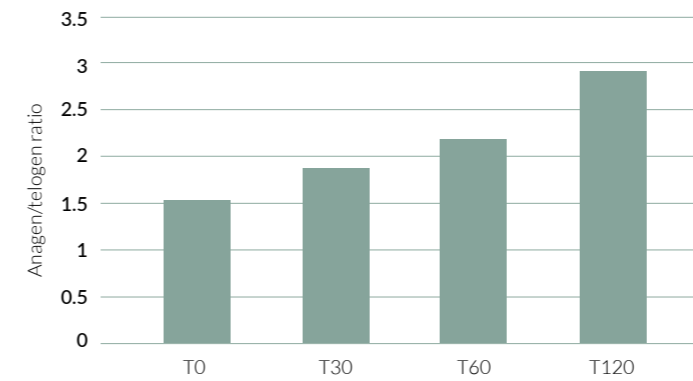


Fig. 3  
Anagen/Telogen ratio from the Trichogram evaluations at baseline (T0) and after 1 month (T30), 2 months (T60), 4 months (T120)

### Wash test (Fig. 4)

The wash test consists in washing the hairs in a basin after refraining from shampooing for 5 days. All hairs collected on the basin floor are counted and divided into 2 distinct categories: hair shorter and longer than 3 cm.

Hairs belonging to the former category are considered vellus hairs. The global number of shed hairs indicates the severity of hair loss (telogen effluvium when >100), while the percentage of vellus hairs indicates the severity of androgenetic alopecia. This method permits to diagnose the association of telogen effluvium with androgenetic alopecia and to establish which of the two disorders is more severe and requires to be treated first.

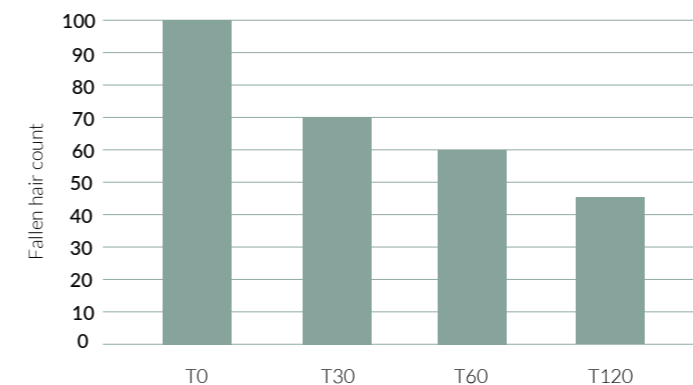


Fig. 4  
Results of wash test: fallen hair count (wash-test applied by the patient after hair wash) at baseline (T0) and after 1 month (T30), 2 months (T60), 4 months (T120)

# CLINICAL PROVEN PERFORMANCE

## STUDY #2

An on-going clinical study in Iran on 20 patients suffering from male/female androgenic alopecia is being conducted.

## STUDY #3

Clinical case studies conducted by Professor Alexander Turkevych (Dermatology, Ukraine) show excellent hair growth after 5 treatments, using 1 syringe of Pluryal® HAIR DENSITY per procedure at 1 week-intervals.

### CASE 1:

Before



After



### CASE 2:

Before



After



# CLINICAL PROVEN PERFORMANCE

### CASE 3:

Before



After



Case study conducted by Dr. Vladlena AVERINA (Dermatology, Ukraine) shows excellent hair growth after 4 treatments at 3 week-intervals (2mL per treatment).

Before



After



# BIOREVITALIZE HAIR FROM THE ROOT



Plural® HAIR DENSITY is a class III medical device which must only be used by doctors who have received specific training on the intradermal injection techniques. Read the instructions before use. Inform the patients about possible side effects.

#### Sources:

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- <sup>2</sup> Park et al. Long-chain polynucleotide filler for skin rejuvenation: efficacy and complications in five patients. *Dermatologic Ther., Jan-Feb 2016; 29(1):37-40.*
- <sup>3</sup> Rubegni, P., De Aloe, G., Mazzatenta, C., Cattarini, L. & Fimiani, M. Clinical evaluation of the trophic effect of polydeoxyribonucleotide (PDRN) in patients undergoing skin explants. A Pilot Study. *Curr Med Res Opin* 17, 128–131 (2001).
- <sup>4</sup> Sini et al. Effect of Polydeoxyribonucleotides on Human Fibroblasts in Primary Culture. *Cell Biochem.Funct.* 17, 107-14 (1999).
- <sup>5</sup> Muratore, O. et al. A human placental polydeoxyribonucleotide (PDRN) may promote the growth of human corneal fibroblasts and iris pigment epithelial cells in primary culture. *New Microbiol* 26, 13 26 (2003).
- <sup>6</sup> Thellung et al. Polydeoxyribonucleotides enhance the proliferation of human skin fibroblasts: involvement of a purinergic receptor subtypes. *Life Sci.* 1999;64(18):1661-64
- <sup>7</sup> Squadrito et al. Pharmacological Activity and Clinical Use of PDRN. *Front Pharmacol.* 2017 Apr 26;8:224
- <sup>8</sup> Bitto et al. Polydeoxyribonucleotide reduces cytokine production and the severity of collagen-induced arthritis by stimulation of adenosine A<sub>2A</sub> receptor. *Arthritis Rheum* 2011 Nov;63(11):3364-71
- <sup>9</sup> Bitto et al. Adenosine receptor stimulation by polynucleotides (PDRN) reduces inflammation in experimental periodontitis. *J Clin Periodontol.* 2013 Jan;40(1):26-32
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- <sup>12</sup> Cavallini M. Stimolazione del trofismo e allungamento del capello. *Hi.Tech Dermo* 2011;5
- <sup>13</sup> Gianfaldoni R, Gianfaldoni S, Nannipieri A, Lotti T. A polynucleotide-based product to treat female hormonal hair loss. *Prime.* 2014;30-36
- <sup>14</sup> Pia Palmieri et al. Luci LED e Polinucleotidi per la caduta dei capelli. Starebene a Messina, febbraio-marzo 2015, p4-5
- <sup>15</sup> Study by Gianfaldoni S, Zanardelli M, Lotti T. on a formulation with 7.5mg/mL polynucleotides. Presented in the 23<sup>rd</sup> World Congress of Dermatology, 8-13 June 2015 Vancouver, Canada. Published in PRIME, September 2014.

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