

# GREEN SCIENCES, A SCIENTIFIC REVOLUTION

**A**t L'Oréal, we believe nature is the future of beauty. It is our inspiration to accelerate our innovation. We work daily for more natural products without compromising on safety or performance. We are committed to creating a more responsible beauty to limit our impact on climate, water and biodiversity. This starts with Green Sciences.

Green Sciences are all the scientific disciplines on which Research & Innovation relies to respect the "planetary boundaries" defined by the scientific community, and achieve our 2030 L'Oréal for the Future targets. They contribute to the preservation of natural resources and biodiversity and to our global eco-design approach, while offering safe and effective products to consumers.

Green Sciences represent a complete revolution in the way we approach science. From Advanced Research to our formulation laboratories, from the sustainable cultivation of ingredients and their extraction, to their transformation through biotechnology or green chemistry, we are entirely rethinking our research to disrupt scientific innovation.

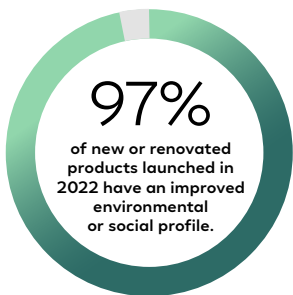
At the crossroads of biology and new technologies, these new sciences have opened up a new and exceptional field of knowledge and innovation. Within this new framework, we are exploring and developing an entire universe of molecules, active ingredients and formulations that combine performance and sustainability.

## 2022 ACHIEVEMENTS

BY 2030,

**100%**

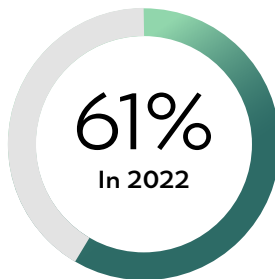
of the Group's products will be ecodesigned.



BY 2030,

**95%**

of our ingredients in formula will be **biobased**, derived from abundant minerals or from circular processes.



BIODEGRADABILITY

**82%**

of ingredients are readily biodegradable, such as hyaluronic acid which is obtained from corn starch and used to give texture.

BY 2030,

we will evaluate all our formulas thanks to our environmental test platform, to guarantee they are respectful of all aquatic ecosystems, whether continental or coastal.



GREEN SCIENCES  
AT THE HEART OF

L'ORÉAL  
FOR THE FUTURE

### TRANSFORMING OURSELVES

- The four pillars of Green Sciences
- A revolution in our approach to science

### EMPOWERING OUR BUSINESS ECOSYSTEM

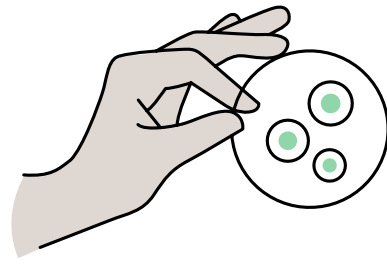
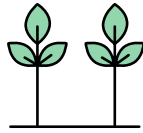
- Green Sciences, a field of open innovation

# 01 | THE 4 PILLARS OF GREEN SCIENCES

GREEN SCIENCES ARE BASED ON FOUR PILLARS THAT LEAD TO PROFOUND CHANGES IN THE DAILY ACTIVITIES OF THE RESEARCH & INNOVATION TEAMS.

## SUSTAINABLE CULTIVATION

refers to the cultural practices and techniques aiming to manage water resources, respect biodiversity and soil quality, limit land occupancy footprint and carbon emissions, while providing biomass for innovation.



TO FIND OUT MORE, DISCOVER THE CENTELLA ASIATICA CULTIVATION.

## GREEN CHEMISTRY

favours non-petrochemical solvents and integrates notions of environmental impact, energy reduction and sustainability of products and processes.



TO FIND OUT MORE, DISCOVER OUR PRO-XYLANE PATENTED ACTIVE.

## GREEN EXTRACTION

is an eco-respectful technology leading to a final ingredient without any (bio)chemical transformation\* of natural resources (plant, algae, mushrooms, microorganisms, cells or abundant minerals).



TO FIND OUT MORE, DISCOVER THE EXAMPLE OF ROSEWOOD EXTRACT IN THE CIRCULAR ECONOMY FACTSHEET

## BIOTECHNOLOGY

makes it possible to obtain an ingredient through the culture of microorganisms (bacteria, yeast, microalgae, fungi) or of plant cells in bioreactors or in a controlled environment, to preserve natural resources.



TO FIND OUT MORE, DISCOVER THE HYALURONIC ACID BIOTECHNOLOGIC PROCESS.

COMBINING INGREDIENTS OBTAINED FROM GREEN SCIENCES ALLOWS US TO OFFER RESPONSIBLE AND SUSTAINABLE PRODUCTS TO CONSUMERS, WHILE MEETING OUR SAFETY AND PERFORMANCE STANDARDS.

\* Except the specific case of enzymatic extraction action on sugars and proteins.

## ZOOM

### SPOT, THE TOOL TO MEASURE AND IMPROVE THE SUSTAINABILITY OF OUR FORMULAS

**SPOT (Sustainable Product Optimization Tool) is a unique tool which measures the environmental and social impact of all of the Group's products.** It is based on a methodology devised with the help of international experts.

Deployed by the Group's brands since 2017, it is fully integrated into the design and launch process for new products and enables us to:

- **simulate different design options and evaluate their impact** on both the environment and society, and to identify the measures for improvement;
- **quantify the reduction in impact made by a product and monitor its progress** in several different areas of improvement, such as the environmental footprint of the packaging and the formula. This would include the proportion of sustainably-sourced ingredients, those produced by Green Sciences, along with the social benefits of the product.

**97% of new or renovated products launched in 2022 have an improved environmental or social profile, including 49% due to a new formula** with a smaller environmental footprint.

## 02 | A REVOLUTION IN OUR APPROACH TO SCIENCE

With Green Sciences, we are developing a new paradigm of cooperation with nature, and we have already begun to transform our processes and our ambitions:

- **We are developing new circular economy solutions and sustainable supply channels** to secure our raw materials in a responsible way.
- **We are accelerating the transformation of our ingredients portfolio** to spearhead sustainable development in the beauty industry and ensure circularity of resources.
- **We are drawing our innovation and creative power from nature, and we are expanding our knowledge of its potential**, in all its diversity. Through biomimicry, **we harness the power of nature to find answers to our functional problems** in areas such as UV protection, holding, resistance and colour: we observe the strategies adopted by natural organisms like plants, bacteria and fungi, and work out how to replicate them to meet our cosmetic needs.



READ THE CIRCULAR ECONOMY FACTSHEET TO FIND OUT MORE



## 03 | GREEN SCIENCES, A FIELD OF OPEN INNOVATION

We are shaping the Green Sciences revolution with our partners around the globe by mobilising the entire Research & Innovation ecosystem we have built through years of collaboration:

- 1 Internal partners:** we draw on the local expertise available throughout the Group to enhance our understanding of nature.
- 2 External partners:** researchers, institutions, companies, corporations, startups, NGOs and an array of suppliers worldwide.

SUCH AS,

- **Centre d'Études et d'Expertise en Biomimétisme (CEEBIOS):** partnership focused on biomimetics through knowledge sharing, training and joint initiatives. Goal: pursue innovations inspired by the living world to make the most of the many solutions nature has to offer.
- **Centre Scientifique de Monaco (CSM):** joint development of a method to accurately assess the impact of sunscreen products on corals.

We have also set up a **Green Sciences Incubator** to help startups develop knowledge and solutions in areas such as sustainable cultivation and biotechnology.

ZOOM

### PARTNER TO GO FURTHER AND DEEPER

**We continue to develop new partnerships in a wide range of fields to develop a global ecosystem built around Green Sciences for beauty.**

In December 2022, L'Oréal and **French biotech firm Microphyt** announced a strategic partnership through which BOLD (L'Oréal's Business Opportunities for L'Oréal Development venture capital fund) acquired a minority stake in Microphyt to strengthen the Group's pioneering Green Sciences ecosystem.

Microphyt has developed **an innovative low-carbon process to produce microalgae** – microscope plant organisms with an array of applications in areas such as the production of ingredients used in cosmetics.

**L'Oréal and Microphyt aim to forge a long-term partnership to develop new natural, renewable cosmetics solutions.**

