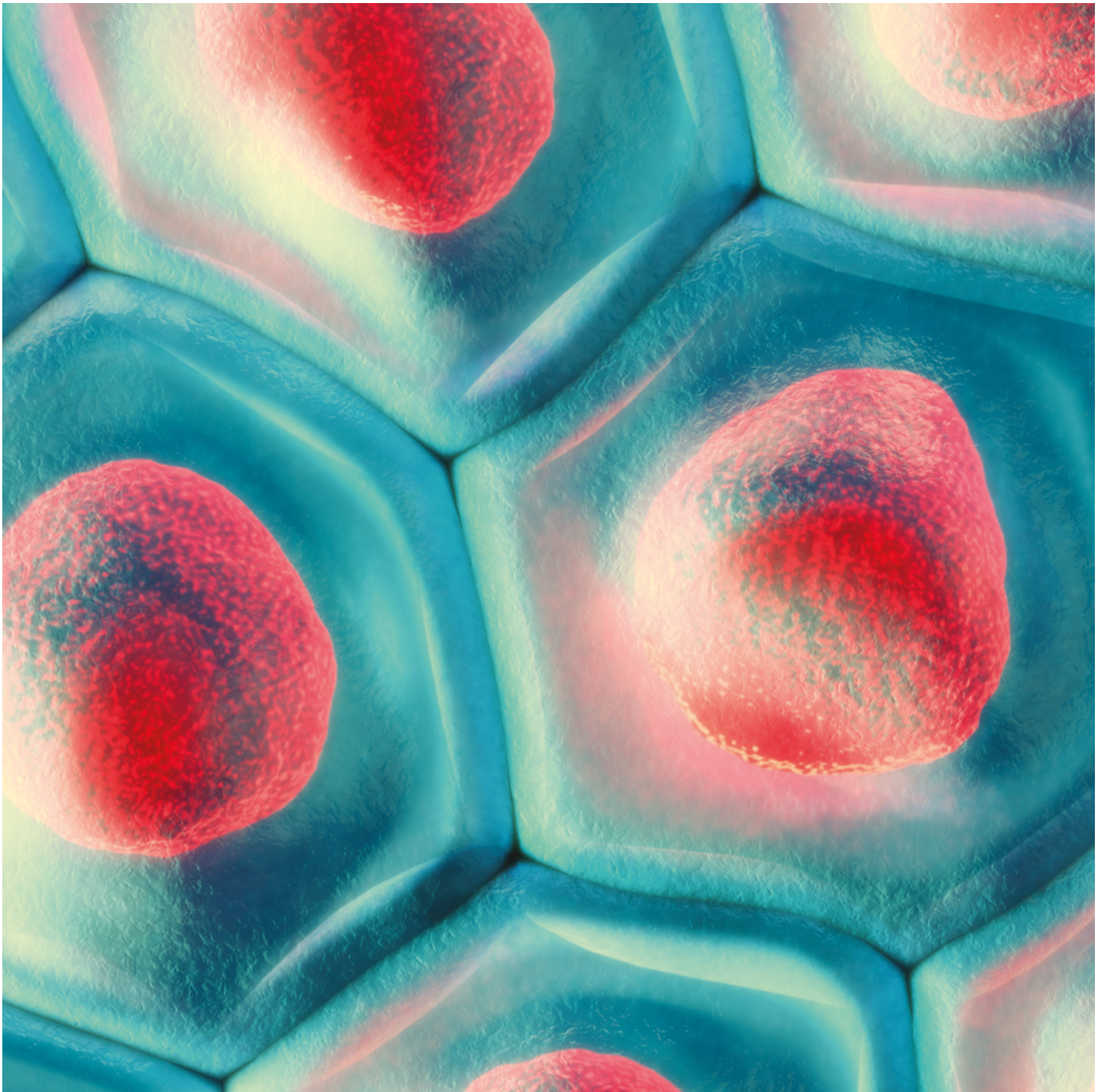


Tools for Dermatological Research

PromoCell®

Solutions for culturing and assaying
human primary cells



Who we are

Founded in Heidelberg – the 'city of science' – in 1990, PromoCell has grown into one of the world's most trusted names in cell culture and cell culture-based research. We're grateful to our customers who have helped us develop and serve biomedical science for over 30 years.

At PromoCell, we help scientists do better research with a world-class portfolio of human primary cells, stem cells, blood cells and optimized cell culture media. Your science is moving the world forward – and we're here to help.



Tools for Dermatological Research

The skin is the largest and most versatile organ in the human body, providing an effective barrier between organism and environment. The complex architecture involves three layers: the epidermis made up of keratinocytes, Merkel cells, melanocytes and Langerhans cells in an interconnected network. The dermis containing hair follicles, sweat glands, sebaceous glands, apocrine glands, lymphatic vessels, blood vessels and protein fibers. Finally, the subcutis with adipocytes,

fibroblasts, macrophages, and connective tissue binding the skin to underlying layers of muscle and bone.

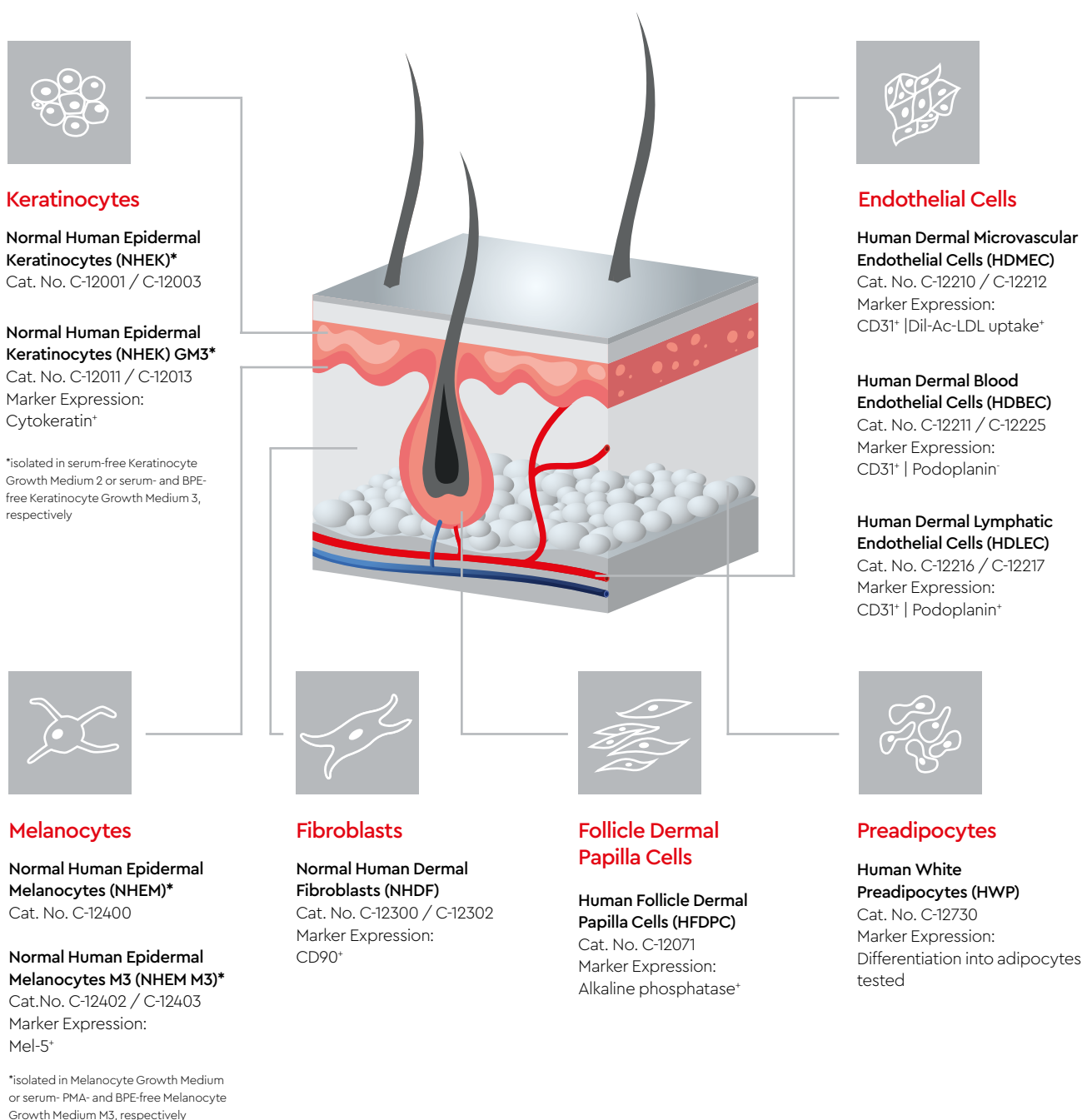
From reacting to sensory stimuli to regulating body temperature and storing lipids and water, the skin performs a plethora of functions to maintain physiological function.

With this complex structure comes the potential for complex pathophysiology – the skin must heal wounds and prevent infection to maintain health. Advances in dermatological

research provide insights into the skin-organ, aiming to improve treatment of skin damage from disease, wounds or burns. Cell culture assays give us the basic knowledge that could translate into new therapies for disease.

We have a complete portfolio for dermatological research, with key dermatological cell types from matched donors, making co-culture experiments with different cell types possible.

Dermal Skin Cells



Dermatological Research Products

Dermatological research is progressing in new ways due to advances in the technology. The ability to grow tissue in a 3D matrix to fully understand how cells function in their native environment is just one example of the research

potential PromoCell tools can provide.

Discover the full range of products in our dermatological portfolio – along with human skin cells, you will find all the tools you need to effectively use these cells as research tools.



Human Skin Cells and Media

Our comprehensive portfolio of dermatological cells (product listing below) can be used for **both 2D and 3D** cell culture. Availability of different cell types from matched donors enables co-culture experiments. Along with a **wide selection of donors**, we have specific information available on donor characteristics and tissue localization (e.g. face, breast, etc.).

Research shows that HLA molecules play a major role in regulating immune responses. This is pertinent to dermatological research where susceptibilities to several skin diseases are linked to different HLA classes (e.g. Vitiligo, psoriasis). To enable dermatological research, we offer cells from donors who are **typed for HLA**.

| Cell type | Description | Cat. n°. | Marker | Recommended culture media |
|---------------|---|----------|--------------------------|---------------------------|
| Keratinocytes | Normal Human Epidermal Keratinocytes (NHEK) juvenile foreskin, single donor, cultured in Keratinocyte Growth Medium | C-12001 | Cytokeratin ⁺ | C-20011 |
| | Normal Human Epidermal Keratinocytes (NHEK) juvenile foreskin, pooled, cultured in Keratinocyte Growth Medium | C-12005 | Cytokeratin ⁺ | C-20011 |
| | Normal Human Epidermal Keratinocytes (NHEK) adult, single donor, cultured in Keratinocyte Growth Medium | C-12003 | Cytokeratin ⁺ | C-20011 |
| | Normal Human Epidermal Keratinocytes (NHEK) adult, pooled, cultured in Keratinocyte Growth Medium | C-12006 | Cytokeratin ⁺ | C-20011 |
| | Normal Human Epidermal Keratinocytes GM3 (NHEK GM3) juvenile foreskin, single donor, cultured in Keratinocyte Growth Medium 3 | C-12011 | Cytokeratin ⁺ | C-20021 |
| | Normal Human Epidermal Keratinocytes GM3 (NHEK GM3) juvenile foreskin, pooled, cultured in Keratinocyte Growth Medium 3 | C-12015 | Cytokeratin ⁺ | C-20021 |
| | Normal Human Epidermal Keratinocytes GM3 (NHEK GM3) adult, single donor, cultured in Keratinocyte Growth Medium 3 | C-12013 | Cytokeratin ⁺ | C-20021 |
| | Normal Human Epidermal Keratinocytes GM3 (NHEK GM3) adult, pooled, cultured in Keratinocyte Growth Medium 3 | C-12016 | Cytokeratin ⁺ | C-20021 |

| Cell type | Description | Cat. n°. | Marker | Recommended culture media |
|-----------------------------------|--|----------|--|-----------------------------|
| Melanocytes | Normal Human Epidermal Melanocytes (NHEM) juvenile foreskin | C-12400 | Mel-5 ⁺ | C-24010 |
| | Normal Human Epidermal Melanocytes M3 (NHEM M3) juvenile foreskin, cultured in Melanocyte Growth Medium M3 | C-12422 | Mel-5 ⁺ | C-24310 |
| | Normal Human Epidermal Melanocytes M3 (NHEM M3) adult donor, cultured in Melanocyte Growth Medium M3 | C-12413 | Mel-5 ⁺ | C-24310 |
| Fibroblasts | Normal Human Dermal Fibroblasts (NHDF) juvenile foreskin | C-12300 | CD90 ⁺ | C-23010 |
| | Normal Human Dermal Fibroblasts (NHDF) adult donor | C-12302 | CD90 ⁺ | C-23020 |
| Follicle Dermal Papilla Cells | Human Follicle Dermal Papilla Cells (HFDPC) | C-12071 | Alkaline phosphatase ⁺ | C-26501 |
| Endothelial Cells (microvascular) | Human Dermal Microvascular Endothelial Cells (HDMEC) juvenile foreskin | C-12210 | CD31 ⁺ Dil-Ac-LDL uptake ⁺ | C-22020/C-22022 |
| | Human Dermal Microvascular Endothelial Cells (HDMEC) adult donor | C-12212 | CD31 ⁺ Dil-Ac-LDL uptake ⁺ | C-22020/C-22022 |
| | Human Dermal Microvascular Endothelial Cells (HDMEC) pre-screened | C-12215 | CD31 ⁺ Dil-Ac-LDL uptake ⁺ VEGF response ⁺ | C-22020/C-22022 |
| | Human Dermal Blood Endothelial Cells (HDBEC) juvenile foreskin | C-12211 | Podoplanin ⁻ CD31 ⁺ | C-22020 |
| | Human Dermal Blood Endothelial Cells (HDBEC) adult donor | C-12225 | Podoplanin ⁺ CD31 ⁺ | C-22020 |
| | Human Dermal Lymphatic Endothelial Cells (HDLEC) juvenile foreskin | C-12216 | Podoplanin ⁺ CD31 ⁺ | C-22022 |
| | Human Dermal Lymphatic Endothelial Cells (HDLEC) adult donor | C-12217 | Podoplanin ⁺ CD31 ⁺ | C-22022 |
| Preadipocytes | Human White Preadipocytes (HWP) subcutaneous | C-12730 | Differentiation tested | C-27410/C-27436/ C-27438 |
| | Human White Preadipocytes (HWP) visceral | C-12732 | Differentiation tested | C-27410/C-27436/ C-27438 |

Publications and References

1. Margue C, Phillippidou D, Kozar I, et al. (2019) Kinase inhibitor library screening synergistic drug combinations in sensitive and resistant melanoma cells. *J Exp Clin Cancer Res.* 38(1):56.
2. Velazquez-Torres G, Shoshan E, Ivan C, et al. (2018) A-to-I miR-378a-3p editing can prevent melanoma progression via regulation of PARVA expression. *Nat Commun.* 9(1):461.
3. Sweeney JG, Liang J, Antonopoulos A, et al. (2018) Loss of GCNT2/1-branched glycans enhances melanoma growth and survival. *Nat Commun.* 9(1):3368.
4. Lotts T, Agelopoulos K, Phan NQ, et al. (2017) Dihydroavanthramine D inhibits mast cell degranulation and exhibits anti-inflammatory effects through the activation of neurokinin-1 receptor. *Exp Dermatol.* 26(8):739-742.
5. Bretz AC, Gittler MP, Charles JP, et al. (2016) ΔNp63 activates the Fanconi anemia DNA repair pathway and limits the efficacy of cisplatin treatment in squamous cell carcinoma. *Nucleic Acids Res.* 44(7):3204-18.

For more information access: www.promocell.com/dermatological-research

Our Commitment to Quality

Ethics are at the heart of our business at PromoCell. We own the entire tissue collection and manufacturing process, which means we're able to provide fast and direct ethical regulatory support. All PromoCell products comply with European biomedical conventions, ensuring human rights and donor privacy are always protected. Our ISO certifications demonstrate our absolute commitment to quality and our

EXCiPACT™ GMP certification enables us to produce our cell culture media and reagents according to GMP standards as a manufacturer of pharmaceutical excipients.

Each year 600 peer-reviewed publications feature PromoCell products. We operate in over 50 countries around the world, helping scientists with all of their research needs.

For more information access: www.promocell.com/compliance



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