



Publications of

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66 Scientific Articles	24 LDM Clinical Studies	22 Kosmetische Medizin	74 With Direct Links
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This document lists selected peer-reviewed publications and clinical studies authored or co-authored by Dr. Ilja Kruglikov, principal researcher at Wellcomet GmbH. His work spans ultrasound technology, caveolin biology, adipose tissue, skin ageing, and clinical aesthetics — forming the scientific foundation for the LDM® Triple platform.

Titles shown in blue are hyperlinked directly to the original publication.

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1. Scientific Articles (66)

Peer-reviewed scientific publications organised by research theme. Titles in blue are clickable hyperlinks.

Ultrasound & Acoustic Technology — 13 papers

Expression of heat shock proteins after ultrasound exposure in HL-60 cells

Sontag W, Kruglikov IL · *Ultrasound Med Biol* (2009) 35(6): 1032-1041

Description of radiation- and ultrasound-induced cell death by a stochastic process

Sontag W, Kruglikov IL · *Radiat Environ Biophys* (2009) 48: 99-105

Ultrasound of 10 MHz frequency as a novel strategy for skin anti-aging therapy

Kruglikov IL, Sontag W · *Medical Hypotheses* (2010) 74(3): 620-621

Dual treatment strategy by venous ulcers: Pilot study to dual-frequency ultrasound application

Kruglikov IL, Kruglikova E · *J Cos Dermatol Sci Appl* (2011) 1(4): 157-163

Facial skin rejuvenation with high frequency ultrasound: Multicentre study of dual-frequency ultrasound

Meyer-Rogge D et al. · *J Cos Dermatol Sci Appl* (2012) 2(2): 68-73

Treatment of non-healing, post-traumatic wound with high frequency ultrasound of 10 MHz: A case report

Gohla T et al. · *Br J Med & Med Res* (2012) 2(4): 520-526

The benefit of dual-frequency ultrasound in patients treated by injection lipolysis

Tausch I, Kruglikov IL · *J Clinic Aesthet Dermatol* (2015) 8(8): 42-46

Influence of layered skin structure on the distribution of radiofrequency currents in dermis and subcutaneous fat

Kruglikov IL · *AIP Advances* (2015) 5: 127122

Influence of the dermis thickness on the results of the skin treatment with monopolar and bipolar radiofrequency currents

Kruglikov IL · *BioMed Res Int* (2016) 2016(1): 1953203.

Assessment of mechanical stress induced by radiofrequency currents on skin interfaces

Kruglikov IL · *BioMed Res Int* (2021) 2021(1): 6623757.

Application of dual-frequency ultrasound for reduction of perilesional edema and ecchymosis after rhinoseptoplasty

Ahn KH, et al. · *J Cosmet Dermatol* (2024) 23(3):830-838.

A retrospective pragmatic two-centre clinical study to evaluate the clinical outcome of triple-frequency ultrasound

Chervinskaya IG, et al. · *J Cosmet Dermatol* (2024) 17:2779-2794

A retrospective pragmatic clinical study to evaluate the clinical outcome of triple-frequency ultrasound

Chervinskaya IG, et al. · *Clin Cosmet Invest Dermatol* (2025) 24(2): e16672

Adipose Tissue & Fat Biology — 25 papers

Soft tissue fillers as non-specific modulators of adipogenesis: change of the paradigm?

Kruglikov IL, Wollina U · *Exper Dermatol* (2015) 24(12):912-915

Dermal Adipocytes: From Irrelevance to Metabolic Targets?

Kruglikov IL, Scherer PE · *Trends Endocrin Metab* (2016) 27(1):1-10

DOI: 10.1016/j.tem.2015.11.002

Dermal adipocytes and hair cycling: Is spatial heterogeneity a characteristic feature of the dermal adipose tissue depot?

Kruglikov IL, Scherer PE · *Exp Dermatol* (2016) 25(4): 258-262.

DOI: 10.1111/exd.12941

Skin aging: are adipocytes the next target?

Kruglikov IL, Scherer PE · *Aging (Albany NY)* (2016) 8(7): 1457.

The facial adipose tissue: a revision

Kruglikov IL et al. · *Facial Plast Surg* (2016) 32(06): 671-682.

Are dermal adipocytes involved in psoriasis?

Kruglikov IL, Scherer PE, Wollina U · *Exp Dermatol* (2016) 25(10): 812-813.

Adipocyte■myofibroblast transition as a possible pathophysiological step in androgenetic alopecia

Kruglikov IL, Scherer PE · *Exp Dermatol* (2017) 26(6): 522-523.

Modeling of the spatiotemporal distribution of temperature fields in skin and subcutaneous adipose tissue after exposure

Kruglikov IL · *AIP Advances* (2017) 7: 105317

Role of adipose tissue in facial aging

Wollina U et al. · *Clin Interv Aging* (2017) 12: 2069-2076.

Dermal adipose tissue in hair follicle cycling: possible applications in alopecia?

Wollina U, Abdel Naser MB, Kruglikov IL · *Georgian Med News* (2017) 4(265): 41-45.

Local effects of adipose tissue in psoriasis and psoriatic arthritis

Kruglikov IL, Wollina U · *Psoriasis (Auckl)* (2017) 7: 17-25.

Interfacial adipose tissue in systemic sclerosis

Kruglikov IL · *Curr Rheumatol Rep* (2017) 19(1): 4.

The role of subcutaneous adipose tissue in psoriasis.

Kruglikov IL, Wollina U · *J Biol Regul Homeost Agents* (2018) 32(1): 159-161.

Dermal adipose tissue has high plasticity and undergoes reversible dedifferentiation in mice

Zhang Z et al. · *J Clin Invest* (2019) 129(12): 5327-5342.

The role of immature and mature adipocytes in hair cycling

Kruglikov IL, Scherer PE · *Trend Endocrinol Metab* (2019) 30(2): 93-105.

Hyaluronan in adipogenesis, adipose tissue physiology and systemic metabolism

Zhu Y et al. · *Matrix Biol* (2019) 78: 284-291.

Hyaluronan in adipogenesis, adipose tissue physiology and systemic metabolism

Zhu Y et al. · *Matrix Biol* (2019) 78: 284-291.

The role of adipocytes and adipocyte■like cells in the severity of COVID■19 infections

Kruglikov IL, Scherer PE · *Obesity* (2020) 28(7): 1187-1190.

Dermal adipocytes contribute to the metabolic regulation of dermal fibroblasts

Zhang Z et al. · *Exp Dermatol* (2021) 30(1): 102-111.

Skin aging: Dermal adipocytes metabolically reprogram dermal fibroblasts

Kruglikov IL, Zhang Z, Scherer PS · *Bioessays* (2022) 44(1): 2100207.

Phenotypical conversions of dermal adipocytes as pathophysiological steps in inflammatory cutaneous disorders

Kruglikov IL, Zhang Z, Scherer PS · *Int J Mol Sci* (2022) 23(7): 3828.

Control of adipose tissue cellularity by the terminal complement cascade

Kruglikov IL, Scherer PE · *Nature Rev Endocrinol* (2023) 19(12): 679-680.

Is the endotoxin–complement cascade the major driver in lipedema?

Kruglikov IL, Scherer PE · *Trend Endocrinol Metab* (2024) 35(9): 769-780.

Defining lipedema's molecular hallmarks by multi-omics approach for disease prediction in women

Straub L et al. · *Metabolism* (2025) 168: 156191.

Regulation of the terminal complement cascade in adipose tissue for control of its volume, cellularity, and fibrosis

Kruglikov IL, Scherer PE · *Obesity* (2025) 33(5): 839-850.

Caveolin Research — 8 papers

Caveolin-1 in skin aging—From innocent bystander to major contributor

Kruglikov IL, Zhang Z, Scherer PS · *Ageing Res Rev* (2019) 55: 100959.

Caveolin-1 as a pathophysiological factor and target in psoriasis

Kruglikov IL, Scherer PE · *NPJ Aging Mech Dis* (2019) 5(1): 4.

Caveolin-1 as a pathophysiological factor and target in psoriasis

Kruglikov IL, Scherer PE · *NPJ Aging Mech Dis* (2019) 5(1): 4.

Caveolin-1 as a target in prevention and treatment of hypertrophic scarring

Kruglikov IL, Scherer PE · *NPJ Regen Med* (2019) 4(1): 9.

Caveolin as a universal target in dermatology

Kruglikov IL, Scherer PE · *Int J Mol Sci* (2019) 21(1): 80.

The MMP14–caveolin axis and its potential relevance for lipoedema

Kruglikov IL, Joffin N, Scherer PE · *Nature Rev Endocrinol* (2020) 16(11): 669-674.

Caveolin-1 as a possible target in the treatment for acne

Kruglikov IL, Scherer PE · *Exp Dermatol* (2020) 29(2): 177-183.

Acoustic Waves in Axonal Membrane and Caveolins are the New Targets for Pain Treatment with High

Kruglikov IL · *J Pain Res* (2020) 13: 2791–2798.

Skin Ageing & Rejuvenation — 3 papers

Neocollagenesis in non-invasive aesthetic treatments

Kruglikov IL · *J Cos Dermatol Sci Appl* (2013) 3(1): 1-5

General theory of skin reinforcement

Kruglikov IL, Scherer PE · *PLoS One* (2017) 12(8): e0182865.

Skin aging as a mechanical phenomenon: The main weak links

Kruglikov IL, Scherer PE · *Nutrition and Healthy Aging* (2018) 4(4): 291-307.

Cellulite & Body Contouring — 2 papers

Pathophysiology of cellulite: Can the puzzle eventually be solved?

Kruglikov IL · *J Cos Dermatol Sci Appl* (2012) 2(1): 1-7

Pathophysiology of cellulite: possible involvement of selective endotoxemia

Kruglikov IL, Scherer PE · *Obesity Rev* (2023) 24(1): e13517.

Dermatological Conditions — 1 paper

Pilot study into super-fractionation treatment strategy for acne and rosacea

Meyer-Rogge D, Kruglikov IL · *J Cos Dermatol Sci Appl* (2013) 3(3): 197-202

Hair Biology — 1 paper

Stochastic modelling of relative light sensitivity of hair follicles

Kruglikov IL · *Open J Biophys* (2013) 3(3): 201-205

Hyaluronan Research — 2 papers

Biophysical basics of body treatments: Is hyaluronan a link that has gone unnoticed?

Kruglikov IL · *Am J Cosm Surg* (2012) 29(2): 121-127

Is the depletion of hyaluronan in hypertrophic fat tissue a key event in body contouring procedures?

Kruglikov IL · *Am J Cosm Surg* (2013) 30(4): 244-245

Metabolic & Systemic Conditions — 1 paper

Obesity and diabetes as comorbidities for COVID-19: Underlying mechanisms and the role of viral–bacterial interactions

Kruglikov IL, Shah M, Scherer PE · *Elife* (2020) 9: e61330.

Other Scientific Publications — 10 papers

Biophysical basics of body treatments: A preliminary study into the correlation between washout and circumference reduction

Kruglikov IL · *Am J Cosm Surg* (2012) 29(3): 196-202

Melanin light absorption as the necessary but not sufficient condition for photoepilation.

Kruglikov IL · *Am J Cosm Surg* (2012) 29(4): 266-272

Melanin light absorption as the necessary but not sufficient condition for photoepilation. Miniaturization and eclipse phenomena

Kruglikov IL · *Am J Cosm Surg* (2013) 30(1): 21-27

General Theory of Body Contouring: 1. Processes of Quick and Slow Modulation of Subcutaneous Fat Tissue

Kruglikov IL · *J Cos Dermatol Sci Appl* (2014) 4(2): 107-116

DOI: 10.4236/jcdsa.2014.42016

General Theory of Body Contouring: 2. Modulation of Mechanical Properties of Subcutaneous Fat Tissue

Kruglikov IL · *J Cos Dermatol Sci Appl* (2014) 4(2): 117-127

DOI: 10.4236/jcdsa.2014.42016

Microstructural inhomogeneity of electrical conductivity in subcutaneous fat tissue.

Kruglikov IL · *PloS ONE* (2015) 10(3): e0117072

DOI: 10.1371/journal.pone.0117072

Sehr hochfrequenter Ultraschall. Neues Therapieverfahren in der Ästhetik und Dermatologie

Kruglikov IL · *Hautarzt* (2015) 66(11):829-833 · [dt]

DOI: 10.1007/s00105-015-3676-z

Microstructural inhomogeneity of electrical conductivity in subcutaneous fat tissue

Kruglikov IL · *Plos One* (2015) 10(3): e0117072.

Sehr hochfrequenter Ultraschall in der ästhetischen Medizin und Chirurgie

Kruglikov IL · *J Ästhet Chir* (2018) 11(3): 124-129 · [dt]

Sehr hochfrequenter Ultraschall in der ästhetischen Medizin und Chirurgie

Kruglikov IL · *Ästhetische Dermatol Kosmetol* (2019) 11(2): 27-31 · [dt]

2. LDM® Clinical Studies (24)

Clinical studies specifically investigating LDM® (Local Dynamic Micromassage) technology. These papers form the peer-reviewed evidence base for the LDM® Triple device.

Ultrasound of 10 MHz frequency as a novel strategy for skin anti-aging therapy

Kruglikov IL, Sontag W · *Medical Hypotheses* (2010) 74(3): 620-621

Expression of heat shock proteins after ultrasound exposure in HL-60 cells

Sontag W, Kruglikov IL · *Ultrasound Med Biol* (2009) 35(6): 1032-1041

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DOI: 10.1007/s00105-015-3676-z

Modeling of the spatiotemporal distribution of temperature fields in skin and subcutaneous adipose tissue after exposure

Kruglikov IL · *AIP Advances* (2017) 7: 105317

DOI: 10.1063/1.4997833

Clinical Experience of an Effective Treatment of Intractable Chronic Venous Ulcer on the Lower Leg

Choi YS, et al. · *Med Laser* (2017) 6(1): 29-31

Sehr hochfrequenter Ultraschall in der ästhetischen Medizin und Chirurgie

Kruglikov IL · *J Ästhet Chir* (2018) 11(3): 124-129

DOI: 10.1007/s12631-018-0140-9

Successful Treatment of Recalcitrant Remaining Postoperative Wounds by Dual-Frequency Ultrasound

Lee WS, et al. · *Med Laser* 2018;7(2):74-78

Sehr hochfrequenter Ultraschall in der ästhetischen Medizin und Chirurgie

Kruglikov IL · *Ästhetische Dermatol Kosmetol* (2019) 11(2): 27-31

Acoustic Waves in Axonal Membrane and Caveolins are the New Targets for Pain Treatment with High

Kruglikov IL · *J Pain Res* (2020) 13: 2791–2798.

Application of Dual-Frequency Ultrasound to Radiation-Induced Fibrosis in a Breast Cancer Patients

Choi YS, Park ES · *Med Laser* (2017) 6(2):86-89

Granuloma Formation, a Rare Complication after PDO Threads Lifting, and Adjuvant Treatment Using

Hong SW, Park ES · *Med Laser* 2019;8(1):35-38

Application of Dual-Frequency Ultrasound for Treating the Ulcerative Necrobiosis Lipoidica

Hong SW, et al. · *Medical Laser* (2019) 8(2):80-83.

Satisfaction with the Effect of Local Dynamical Micromassage Therapy on the Pain and Discomfort after

Ahn KH, et al. · *Med Laser* (2020) 9(1):39-43

Application of dual-frequency ultrasound for reduction of perilesional edema and ecchymosis after rhinoseptoplasty

Ahn KH, et al. · *J Cosmet Dermatol* (2024) 23(3):830-838.

A retrospective pragmatic two-centre clinical study to evaluate the clinical outcome of triple-frequency ultrasound

Chervinskaya IG, et al. · *J Cosmet Dermatol* (2024) 17:2779-2794

A retrospective pragmatic clinical study to evaluate the clinical outcome of triple-frequency ultrasound

Chervinskaya IG, et al. · *Clin Cosmet Invest Dermatol* (2025) 24(2): e16672

Retrospective analysis of multi-central case reports for treatment of acne patients with device LDM®-MED

Meyer-Rogge D, Meyer-Rogge E · *White paper*

Retrospective analysis of multi-central case reports for treatment of rosacea patients with device LDM®-MED

Meyer-Rogge D, Meyer-Rogge E · *White paper*

Retrospective analysis of multi-central case reports for treatment of eczema patients with device LDM®-MED

Meyer-Rogge D, Meyer-Rogge E · *White paper*

Retrospective analysis of multi-central case reports for treatment of chronic wounds with device LDM®-MED

Holzschuh P, Litzowsky T · *White paper*

3. Kosmetische Medizin Articles (22)

Articles published in *Kosmetische Medizin*, a leading German-language journal for aesthetic medicine. Primarily in German (dt).

Nicht invasive Umfangreduzierung: Warum bleiben einige Fettablagerungen behandlungsresistent?

Kruglikov IL, Hoffmann K · *Kosmetische Medizin* (2011) 3: 108-113 · [dt]

Kontroversen in der ästhetischen Medizin: 1. Inwieweit stimmen die Grundlagen?

Kruglikov IL · *Kosmetische Medizin* (2012) 5: 182-191 · [dt]

Kontroversen in der ästhetischen Medizin: 2. Simplex sigillum veri der Photoepilation

Kruglikov IL · *Kosmetische Medizin* (2012) 6: 238-242 · [dt]

Kontroversen in der ästhetischen Medizin: 3. Neokollagenese - "Die unendliche Geschichte"

Kruglikov IL · *Kosmetische Medizin* (2013) 1: 20-24 · [dt]

Kontroversen in der ästhetischen Medizin: 4. Enigma der Cellulite

Kruglikov IL · *Kosmetische Medizin* (2013) 2: 68-73 · [dt]

Kontroversen in der ästhetischen Medizin: 5. Body Contouring - Eine einheitliche Vielfalt

Kruglikov IL · *Kosmetische Medizin* (2013) 3: 114-120 · [dt]

Kontroversen in der ästhetischen Medizin: 6. Skin Tigheting Methoden - Das Märchen des Kollagenschrumpfens

Kruglikov IL · *Kosmetische Medizin* (2013) 4: 166-171 · [dt]

Kontroversen in der ästhetischen Medizin: 7. Kryolipolyse - Apoptose vs. Thermogenese

Kruglikov IL · *Kosmetische Medizin* (2013) 5: 202-207 · [dt]

Kontroversen in der ästhetischen Medizin: 8. Behandlungsschema - Das verbotene Thema

Kruglikov IL · *Kosmetische Medizin* (2013) 6: 261-265 · [dt]

Dermale Adipozyten in Dermatologie und Ästhetischer Medizin: Fakten und Hypothesen

Kruglikov IL · *Kosmet Med* (2016) 37(2): 52-59. · [dt]

Radiofrequente Ströme in der Ästhetischen Medizin: Status nascendi / Status quo

Kruglikov IL · *Kosmet Med* (2016) 37(3): 94-103. · [dt]

Hautalterung: Der König ist tot, es lebe der König?

Kruglikov IL · *Kosmet Med* (2017) 38(1): 16-24. · [dt]

Hautalterung: Der König ist tot, es lebe der König?

Kruglikov IL · *Kosmet Med* (2017) 38(1): 16-24. · [dt]

Hautalterung als mechanisches Phänomen: Was sind die wichtigsten Schwachstellen der Haut bei Ihrer Alterung?

Kruglikov IL · *Kosmet Med* (2018) 39(3): 24-30. · [dt]

Hautalterung als mechanisches Phänomen: Was sind die wichtigsten Schwachstellen der Haut bei Ihrer Alterung?

Kruglikov IL · *Kosmet Med* (2018) 39(3): 24-30. · [dt]

Entdeckung der Zelltransformationen in der Haut markiert den Beginn einer neuen Ära in der Dermatologie und

Kruglikov IL · *Kosmet Med* (2020) 41(2): 20-24. · [dt]

Entdeckung der Zelltransformationen in der Haut markiert den Beginn einer neuen Ära in der Dermatologie und

Kruglikov IL · *Kosmet Med* (2020) 41(2): 20-24. · [dt]

Endotoxemia and COVID-19 – A dangerous alliance

Kruglikov IL · *Kosmet Med* (2020) 41(6): 278-283.

Umwertung der Cellulite: Geht es um die niedriggradige Endotoxämie?

Kruglikov IL · *Kosmet Med* (2022) 43(5): 14-14. · [dt]

Dermale Adipozyten in Dermatologie und ästhetischer Medizin – Neue Therapieansätze

Kruglikov IL · *Kosmet Med* (2022) 43(3): 104-109. · [dt]

Lipödem - Haben wir eine Lösung des ewigen Puzzles?

Kruglikov IL · *Kosmet Med* (2024) 45(4): 4-12. · [dt]

Skin longevity–skin-related healthier aging through preventive remediation of the skin and subcutis

Kruglikov IL · *Kosmet Med* (2025) 46(2): 24-31. · [dt]

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