



LEISTUNGSBERICHT 2009

„Siegfried Trattnig“

- Projekte:** (1- Vienna Spots of Excellence, 3-FWF, 1- BRIDGE des FFG, 1- OENB, , 1- Uni Infrastruktur I-III) 1 Bracco, 1- Siemens
- Publikationen:** 15 Top 11 Standard
- Vorträge:** 15 invited, 18 Präsentationen,
- Gutachten:** 1 für Dissertationen und Diplomarbeiten
2 für Habilitationen
- Betreuung von PhD Programmen:** 3
- Reviewtätigkeit:** für 15 Journale
3 Wissenschaftliche Fonds
(National Institute of Health, Jubiläumsfond der Nationalbank, Bürgermeisterfond der Stadt Wien)
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Publikationen

1. T2 and T2* mapping in patients after matrix-associated autologous chondrocyte transplantation: initial results on clinical use with 3.0-Tesla MRI.
Welsch GH, **Trattnig S**, Hughes T, Quirbach S, Olk A, Blanke M, Marlovits S, Mamisch TC.
Eur Radiol. 2009 Nov 25. [Epub ahead of print]
2. Diffusion-weighted MR for Differentiation of Breast Lesions at 3.0 T: How Does Selection of Diffusion Protocols Affect Diagnosis?
Bogner W, Gruber S, Pinker K, Grabner G, Stadlbauer A, Weber M, Moser E, Helbich TH, **Trattnig S**.
Radiology. 2009 Nov;253(2):341-51. Epub 2009 Jul 31.
3. The in vivo effects of unloading and compression on T1-Gd (dGEMRIC) relaxation times in healthy articular knee cartilage at 3.0 Tesla.
Mayerhoefer ME, Welsch GH, Mamisch TC, Kainberger F, Weber M, Nemeč S, Friedrich KM, Dirisamer A, **Trattnig S**.
Eur Radiol. 2009 Sep 1.
4. A phenomenological approach toward patient-specific computational modeling of articular cartilage including collagen fiber tracking.
Pierce DM, Trobin W, **Trattnig S**, Bischof H, Holzapfel GA.
J Biomech Eng. 2009 Sep;131(9):091006.
5. Three-dimensional magnetic resonance observation of cartilage repair tissue (MOCART) score assessed with an isotropic three-dimensional true fast imaging with steady-state precession sequence at 3.0 Tesla.
Welsch GH, Zak L, Mamisch TC, Resinger C, Marlovits S, **Trattnig S**.
Invest Radiol. 2009 Sep;44(9):603-12.
6. T1(Gd) gives comparable information as Delta T1 relaxation rate in dGEMRIC evaluation of cartilage repair tissue.
Trattnig S, Burstein D, Szomolanyi P, Pinker K, Welsch GH, Mamisch TC.
Invest Radiol. 2009 Sep;44(9):598-602.
7. A Combined High Temporal and High Spatial Resolution 3 Tesla MR Imaging Protocol for the Assessment of Breast Lesions: Initial Results.

Pinker K, Grabner G, Bogner W, Gruber S, Szomolanyi P, **Trattnig S**, Heinz-Peer G, Weber M, Fitzal F, Pluschnig U, Rudas M, Helbich T
Invest Radiol. 2009 Sep;44(9):553-8.

8. A combined high temporal and high spatial resolution 3 Tesla MR imaging protocol for the assessment of breast lesions: initial results.

Pinker K, Grabner G, Bogner W, Gruber S, Szomolanyi P, **Trattnig S**, Heinz-Peer G, Weber M, Fitzal F, Pluschnig U, Rudas M, Helbich T.
Invest Radiol. 2009 Sep;44(9):553-8.

9. Assessment of (^{31}P) relaxation times in the human calf muscle: A comparison between 3 T and 7 T in vivo.

Bogner W, Chmelik M, Schmid AI, Moser E, **Trattnig S**, Gruber S.
Magn Reson Med. 2009 Sep;62(3):574-82.

10. Multimodal approach in the use of clinical scoring, morphological MRI and biochemical T2-mapping and diffusion-weighted imaging in their ability to assess differences between cartilage repair tissue after microfracture therapy and matrix-associated autologous chondrocyte transplantation: a pilot study.

Welsch GH, **Trattnig S**, Domayer S, Marlovits S, White LM, Mamisch TC.
Osteoarthritis Cartilage. 2009 Sep;17(9):1219-27. Epub 2009 Apr 17.

11. Tibial cartilage hypertrophy due to matrix-associated autologous chondrocyte transplantation of the medial femoral condyle. A case report

Welsch GH, **Trattnig S**, Tichy B, Mamisch TC, Wondrasch B, Marlovits S
J Bone Joint Surg Am. 2009 Aug;91(8):1996-2001

12. Quantitative T2 mapping during follow-up after matrix-associated autologous chondrocyte transplantation (MACT): Full-thickness and zonal evaluation to visualize the maturation of cartilage repair tissue.

Welsch GH, Mamisch TC, Marlovits S, Glaser C, Friedrich K, Hennig FF,
Salomonowitz E, **Trattnig S**.
J Orthop Res. 2009 Jul;27(7):957-63.

13. Rapid estimation of cartilage T2 based on double echo at steady state (DESS) with 3 Tesla.

Welsch GH, Scheffler K, Mamisch TC, Hughes T, Millington S,
Deimling M, **Trattnig S**.

Magn Reson Med. 2009 Aug;62(2):544-9.

14. Effects of Magnetic Resonance Image Interpolation on the Results of Texture-Based Pattern Classification: A Phantom Study.

Mayerhoefer ME, Szomolanyi P, Jirak D, Berg A, Materka A, Dirisamer A, **Trattnig S**.
Med Phys. 2009 Apr;36(4):1236-43.

15. [Radiological diagnosis of femoroacetabular impingement.]

Mamisch TC, Werlen S, Zilkens C, **Trattnig S**, Kim YJ, Siebenrock KA, Bittersohl B.
Radiologe. 2009 May;49(5):425-33. German.

16. [Coxarthrosis - an update.]

Imhof H, Nöbauer-Huhmann I, **Trattnig S**.
Radiologe. 2009 May;49(5):400-9. German.

17. Effects of MRI acquisition parameter variations and protocol heterogeneity on the results of texture analysis and pattern discrimination: an application-oriented study.

Mayerhoefer ME, Szomolanyi P, Jirak D, Materka A, **Trattnig S**.
Med Phys. 2009 Apr;36(4):1236-43.

18. In vitro determination of biomechanical properties of human articular cartilage in osteoarthritis using multi-parametric MRI.

Juras V, Bittsanky M, Majdisova Z, Szomolanyi P, Sulzbacher I, Gäbler S, Stampfl J, Schüller G, **Trattnig S**.
J Magn Reson. 2009 Mar;197(1):40-7.

19. Initial results of in vivo high-resolution morphological and biochemical cartilage imaging of patients after matrix-associated autologous chondrocyte transplantation (MACT) of the ankle.

Quirbach S, **Trattnig S**, Marlovits S, Zimmermann V, Domayer S, Dorotka R, Mamisch TC, Bohndorf K, Welsch GH.
Skeletal Radiol. 2009 Aug;38(8):751-60. Epub 2009 Mar 19.

20. MR imaging of cartilage and its repair in the knee - a review.

Trattnig S, Domayer S, Welsch GW, Mosher T, Eckstein F.
Eur Radiol. 2009 Jul;19(7):1582-94. Epub 2009 Mar 13. Review.

21. In vivo quantification of intracerebral GABA by single-voxel (1)H-MRS-How reproducible are the results?

Bogner W, Gruber S, Doelken M, Stadlbauer A, Ganslandt O, Boettcher U, **Trattnig S**, Doerfler A, Stefan H, Hammen T.

Eur J Radiol. 2009 Feb 5. [Epub ahead of print]

22. Diffusion-weighted imaging for the follow-up of patients after matrix-associated autologous chondrocyte transplantation.

Friedrich KM, Mamisch TC, Plank C, Langs G, Marlovits S, Salomonowitz E, **Trattnig S**, Welsch G.

Eur J Radiol. 2009 Jan 30. [Epub ahead of print]

23. T2 mapping and dGEMRIC after autologous chondrocyte implantation with a fibrin-based scaffold in the knee: Preliminary results.

Domayer SE, Welsch GH, Nehrer S, Chiari C, Dorotka R, Szomolanyi P, Mamisch TC, Yayon A, **Trattnig S**.

Eur J Radiol. 2009 Jan 19. [Epub ahead of print]

Publikationen in press

24. Clinical use of diffusion weighted imaging and T2 relaxation for the differentiation of cartilage repair tissue in patients after microfracture therapy (MFX) and matrix-associated autologous chondrocyte transplantation (MACT):

a feasibility study

G.H. Welsch, **S. Trattnig**, S. Domayer, S. Marlovits, L.M. White, T.C. Mamisch.

Corresponding author: **Trattnig S**

Osteoarthritis and Cartilage (accepted with revisions)

25. 3D GRE sequence with two different flip angle excitation pulses for zonal T1- mapping of articular cartilage at 3T: one-year follow-up in patients after matrix-associated autologous chondrocyte transplantation (MACT) of the knee joint (preliminary results)

K. Pinker, P. Szomolanyi, G H. Welsch, T. C. Mamisch, S. Marlovits, A.Stadlbauer, E. Salomonowitz, **Trattnig S**. AJR (in press)

26. T2 Mapping versus Diffusion-Weighted Imaging for the Assessment of Cartilage Repair Tissue after Matrix-Associated Autologous Chondrocyte Transplantation at 3.0 Tesla

Trattig S.

European Musculoskeletal Review Volume 3 (in press)

Reviewtätigkeit für folgende Journale

“European Journal of Radiology”,

“European Radiology“

“Investigative Radiology“

“Magnetic Resonance in Medicine”

“Röntgen Fortschritte”

Journal of Magnetic Resonance Imaging”

“Neuroradiology”

“Osteoarthritis and Cartilage”

“Der Radiologe“

“Annals of the Rheumatic Diseases”

“Arthritis Research and Therapy”

“Journal of Orthopedics and related research”

“American Journal of Radiology”

„American Journal of Neuroradiology“

Ernennungen

Speaker der European Society of Radiology –

Europäische Initiative: Medical Devices Exploratory Process

Speaker der MUW für den Antrag Doktoratskolleg plus Programm des FWF: “Biomedical Engineering” Interuniversitär Kooperation MUW-TUW

ICRS Speaker für den internationalen State of the art article: “Imaging of Cartilage Repair”

Member of the EMEA Advisory Board

ESFRI Roadmap for pan European research infrastructures.

Knoten: Ultra Hochfeld MR

Editorial Board Member: für folgende Journale

Insights into Imaging

World Journal of Radiology

Recent Patents in Imaging

Projekteinreichungen

ERC Advanced Investigator Grant: Treshholds für die 1.und 2.Stufe geschafft, trotzdem keine Finanzierung, aber Möglichkeit der nochmaligen Einreichung

Doctoral Programm - Plus (DK-plus) in Biomedical Engineering

Doktoratskolleg - Plus (DK-plus) in Biomedizinische Technik

eingereicht am 1.November 2009

laufende Projekte

Uni-Infrastrukturprogramm II des BM für Bildung, Wissenschaft und Kultur

Grossgeräte-Antrag für ein 7 Tesla Ganzkörper-MRT eingereicht

von Trattnig S und Moser E vom Kompetenzzentrum für Hochfeld-MR

bewilligt im Juli 2005

Bewilligte Summe: **4 Mio €** aufgeteilt auf 3 Jahre

Vienna Spots of Excellence des Wiener Wissenschafts-und Technologie-Fonds (WWTF)

Vienna Advanced Imaging Center (VIACLIC) FA102A0017

bewilligt am 01.12.2008

bewilligte Summe: **2 Mio€**

Fa. Siemens FA771A0101

7T- Hochfeld MR

Bewilligt am 04.05.2005

Bewilligte Summe: **810.000€**

Je 50% S.Trattnig, E.Moser **405.000€**

BRIDGE-Programm des FFG

Sequenztechnik-Entwicklung und Optimierung am Hochfeld-MR (3+7 Telsa)

Bewilligt am 28.6.2006

bewilligte Summe: **342.700 €**

FWF-Projekt P18110-B15

Visualization of Biomechanical properties of articular cartilage by MR

bewilligt am 21.06.2005,

bewilligte Summe: **408.000 €**

FWF APL00494FW

Biochemical Imaging of intervertebral disc at 3T

bewilligt am 02.06.2008,

bewilligte Summe: **294.800€**

FWF-TRP-Projekt L243-B15

Monitoring of autologous cartilage implantation by 3T MR.

Bewilligt am 12.10.2005,

bewilligte Summe: **286.000€**

Öst.Nationalbank AP11954ONB

Improved preoperative evaluation of cerebral cavernous hemangiomas by high resolution and contrast-enhanced SWI-high field MRT (3T). Comparison with standard MRI and histopathology.

Bewilligt am 01.07.2006,

bewilligte Summe: **41.000€**

Bracco Group

Vergleich der KM-Aufnahme von Hirntumoren

bei 3Tesla und 7 Tesla

bewilligte Summe: **15.000 €**

Lehre

PhD Programm Mag.Marek Chmelik

PhD Programm Dr.David Stelzeneder

PhD Programm Stephan Domayer

501046	Journal Club: Regeneration von Knochen und Gelenken
501047	Thesis Seminar: Regeneration von Knochen und Gelenken.
532313	Der Bewegungsapparat in der Magnetresonanz
902590	Journal Club
902592	Thesis Seminars
902653	Practical Course: Regeneration von Knochen und Gelenken. (Introduction to MRT)
902785	Bone and Joint regeneration

Organisation

- Tagungspräsident
Jahrestagung des Verbandes für Medizinischen Strahlenschutz Österreichs
Strahlenschutz Interdisziplinär
MuseumsQuartier, Wien, 6.11.2009
- Faculty
Programm - Komitee
10TH EFFORT Congress , Vienna, Austria 3.-6. June 2009
- Programm - Komitee
ICRS 8th Word Congress of the International Cartilage Repair Society
23 - 26.May 2009, Miami Florida, USA

Invited talks

- Molekulare Bildgebung der Bandscheibe
7.Interdisziplinärer Van Swieten Kongress
Wien, AT, 27.- 28.11.2009

- Von Routine MRT mit 3T zur Forschung mit 7T
14. Radiologie - Update, Innsbruck, AT, 19.11.2009
- Knorpelbildung bei 3- und 7 Tesla
26.Herbst-Symposium, München, Deutschland, 14.11.2009
- MRT bei 1,5T, 3T oder 7Tesla
- Muskuloskelettale Bildgebung bei Sportverletzungen
**15.klinisch-Radiologischen Symposium
in Stuttgart, Deutschland, 17.10.2009**
- Imaging of Post- Operative Cartilage Repair
**36th Annual Imaging Update Courses, Washington, USA
2.-5.September 2009**
- Cartilage Biology
**Internationales Symposium, Larissa,
Griechenland 20.Juni 2009**
- New MR techniques in MSK system at high and
ultra-high field (3T-7T)
16th ESSR Annual Congress, Genua, Italien, 11-13 Juni 200
- VIACLIC Collaboration incl.CEST
**AGENDA Advisory Board Orthopedic Diagnostics
Erlangen, Deutschland, 4.Juni 2009**
- Biomedical and biomechanical MR imaging of the intervertebral disc.
- **10TH EFFORT Congress , Vienna, Austria 3.-6. June**
- From Morphological to Biochemical MRI of Cartilage Repair
**ICRS 8th Word Congress of the International Cartilage Repair Society
23 - 26.May 2009, Miami Florida, USA**
- High field MR imaging of the lower extremity

**ISMRM 17th Scientific Meeting & Exhibition,
18-24.4.2009 Honolulu**

- MRI of sellar lesion
- High-field MR (3.0 Tesla) in MSK: pros and cons
- Imaging of the degenerative spine
- Susceptibility-weighted imaging of the brain

**5th Congress of the Radiological Society of
Saudi Arabia, 30.3-3.4.2009**

Präsentationen

1. T_1 (Gd) gives comparable information as delta T_1 relaxation rate in dGEMBRIC evaluation of cartilage repair tissue.
S.Trattnig, D.Burnstein, P.Szomolanyi, K.Pinker, G.H.Welsch, T.C.Mamisch
2. Cartilage repair in the patella and the medial femoral condyle- Topographical differentiation using morphological MRI and biochemical zonal T2 mapping
G.H.Welsch, T.C.Mamisch, L.Zak, S.Quirbach, F. Henning, S.Marlovits, **S.Trattnig**.
3. Multiparametric in vivo MR for Repair Tissue Differentiation
G.H. Welsch, T.C.Mamisch, S.Domayer, S. Marlovits, **S.Trattnig**
4. From Morphological to Biochemical MRI of Cartilage Repair
S.Trattnig
ICRS 8th Word Congress of the International Cartilage Repair Society
23 - 26.May 2009, Miami Florida, USA
5. Morphological and Biochemical (T2) MR Evaluation and Comparison of Cartilage Repair Tissue of the Patella and the Medial Femoral Condyle.
Goetz Hannes Welsch¹, T. Ch. Mamisch, L. Zak, S. Quirbach, St Marlovits, **S. Trattnig**
6. Comparison of Different Diffusion Parameters in DWI for Differentiation of Breast Lesions: The Influence of the Choice of B-Values.
W.Bogner, St.Gruber, K.Pinker, G.Grabner, A.Stadlbauer,

E.Moser, Th.Helbich, **S.Trattnig**.

7. Three-Dimensional Magnetic Resonance Observation of Cartilage Repair Tissue (3D MOCART) Score Assessed with an Isotropic 3D-True-FISP Sequence at 3.0 Tesla
G.H.Welsch, L.Zak, T.Ch.Mamisch, Ch.Resinger, St.Marlovits, **S.Trattnig**.
8. Three Dimensional ^1H Magnetic Resonance Spectroscopy in Breast Cancer as an Indicator of Therapy Response. a A Pilot Study
St.Gruber, W.Bogner, M.Chmelik, K.Pinker, L.Ponhold, M.Krssak, **S.Trattnig**.
9. Deconvolved SWI Phase Model of Patients with Parkinson Disease.
G.Grabner, **S.Trattnig**, M.Barth
10. High Contrast and High Resolution in Vitro Susceptibility Imaging (SWI) at 7 Tesla.
G. Grabner, A-M von Cappellen van Walsum, **S.Trattnig**, M.Barth
11. Detection of Degenerative Cartilage Disease: Comparison of High Resolution Morphological MR and Quantitative T2 Mapping at 3 Tesla.
S.Trattnig, S.Apprich, P.Szomolanyi, M.Mayerhöfer, K.Pinker, T.CH.Marmisch, G.H.Welsch.
12. In Vitro Correlation of MR Parameters Under Loading with Biomechanical Properties of Degenerated Articular Cartilage.
V.Juras, P.Szomolanyi, Z.Majdisova, I.Sulzbacher, St.Gäbler, **S.Trattnig**,
13. In Vivo Effects of Unloading and Compression on T2 and T1 Gd (DGEMRIC) Relaxation Times of Healthy Knee Articular Cartilage at 3 Tesla
M.Mayerhöfer, G.Welsch, T.Ch.Marmisch, **S.Trattnig**
14. Sodium in Vivo Measurement of T1 and T2 Relaxation Times of Articular Cartilage at 7 Tesla
St.Zbyn, V.Juras, W.Bogner, P.Szomolanyi, G.H.Welsch, M.Bittsanky, V.Mlynarik, E.Moser, **S.Trattnig**.
15. Hepatic Phosphorus Metabolite Concentrations of Patients with Type 2 Diabetes Assessed by ^{31}P 3D MRSI.
M.Chmelik, A.I.Schmid, St.Gruber, W.Bogner, J. Szendroedi, M.Krssak,

S.Trattnig, E.Moser, M.Roden.

16. Dynamic Contrast-Enhanced Magnetic Resonance Imaging of the Breast at 3.0 Tesla:
Combination of High Temporal- And Spatial Resolution - A New Approach

G Grabner, K Pinker, St Gruber, W Bogner, Th Helbich, **S Trattnig**

17. Relaxation Time Measurements of ³¹P Metabolites in the Human Calf
Muscle at 7 Tesla

W Bogner, M Chmelik, A I Schmid, E Moser, **S Trattnig**, St Gruber

18. Deconvolution and QSI of Simulated Phase Images of the Human Brain:
Applications to Assess Susceptibility

G Grabner, **S Trattnig**, M Barth

ISMRM 17th Scientific Meeting & Exhibition, 18-24.4.2009 Honolulu