Curriculum Vitae

Charles E. Jakobsche, Ph.D.

Clark University, Carlson School of Chemistry & Biochemistry
950 Main Street, Worcester, MA 01610-1400, USA
Email: cjakobsche@clarku.edu
Office Phone: 508-793-8866 Fax: 508-793-7117
Website: http://wordpress.clarku.edu/cjakobsche

Education

B.A. Williams College, Williamstown, MA (Chemistry, 2004)
- ***Highest departmental honors***
- Advisor: J. Hodge Markgraf
- Thesis: "A Library of Benzocanthinones"
- Summer research: Leiden University, The Netherlands (Organic Chemistry, 2002) (Advisor: Jacques van Boom)

Ph.D. Yale University, New Haven, CT (Organic Chemistry, 2009)
- ***Richard Wolfgang Prize*** for top dissertation in the Yale Chemistry Department
- Advisor: Scott J. Miller
- Thesis: "Development and Analysis of Peptide-Based Catalysts for Selective Epoxidation and Glycosylation Reactions"
- Studied at Boston College (2004–2006) then Yale (2006–2009)

Professional Positions

Postdoctoral Fellow: Yale University, New Haven, CT (Chemical Biology, 2009–2012)
- ***Ruth Kirschstein Fellowship*** (National Institute of Health F32, via National Cancer Institute)
- Leslie Warner Fellowship (Yale Cancer Center)
- Advisor: David A. Spiegel (Chemistry Department)
- Development of immune-redirecting small-molecule cancer therapeutics and evaluation of their effects on live cells

Assistant Professor: Clark University, Worcester, MA (Organic/Medicinal Chemistry, 2012–2018)
Associate Professor: Clark University, Worcester, MA (Organic/Medicinal Chemistry, 2018–present)
- ***Research Interests***: Organic synthesis & methodology, chemical biology, chemistry of medicine
- Carlson School of Chemistry & Biochemistry (2012–present)
- Interdepartmental Biochemistry & Molecular Biology Program Member (2013–present)
- Interdepartmental Health, Science, & Society Program Member (2017–present), Codirector (2018–present)

Research Publications

·In my field, the student authors are typically listed first in the order of their contributions, followed by any non-principal-investigator faculty, and finally the principal investigators with the lead author last.

Key Work *Corresponding Author
%Undergraduate students from Clark University @Graduate students from Clark University

Peer-Reviewed Research Articles from Work Done at Clark University

(19) "Bifunctional Molecular Probes for Activity-Based Visualization of Quinone-Dependent Amine Oxidases"
%A. A. Burke, %L. Barrows, %M. J. Solares, %A. D. Wall, *C. E. Jakobsche
Chem. Eur. J. **2018**, *accepted*

(18) "A Versatile Platform for Adding Functional Properties to Amyloid Fibrils"
%D. A. Fontaine, @V. Ivancic, @M. B. Reardon, N. D. Lazo, *C. E. Jakobsche
Org. & Biomol. Chem. **2017**, *15*, 8023–8027

(17) "Comparing Hydrazine-Derived Reactive Groups as Inhibitors of Quinone-Dependent Amine Oxidase"
%A. A. Burke, %E. S. Severson, %S. Mool, %M. J. Solares Bucaro, *F. T. Greenaway, *C. E. Jakobsche
J. Enz. Inhib. & Med. Chem. **2017**, *32*, 496–503

(16) "Bistability in Organic Magnetic Materials. A Comparative Study of the Key Differences between Hysteretic and Non-Hysteretic Spin Transitions in Dithiazolyl Radicals"
S. Vela, @M. B. Reardon, C. E. Jakobsche, Mark M. Turnbull, *J. Ribas–Arino, *J. J. Novoa
Chem. Eur. J. **2017**, *23*, 3479–3489

(15) "Long-Range Reactivity Modulations in Geranyl Chloride Derivatives"
@M. B. Reardon, @M. Xu, @Q. Tan, %P. G. Baumgartel, %D. J. Augur, S. Huo, *C. E. Jakobsche
J. Org. Chem. **2016**, *81*, 10964–10974

(14) "A Regio- and Stereo-Selective Annulation to Form the "Inside-Out" *trans*-Bicyclo[9.2.1]Tetradecane Ring System"
@M. B. Reardon, %B. C. Yasgur, *C. E. Jakobsche
Tetrahedron Lett. **2016**, *57*, 2782–2785
·Also see highlight: Organic Chemistry Portal: December 12th, 2016

(13) "A Simple Synthesis of 6-Hydroxynorleucine Based on the Rearrangement of an *N*-Nitrosodichloroacetamide"
%B. G. McCarthy, %N. S. MacArthur, *C. E. Jakobsche
Tetrahedron Lett. **2016**, *57*, 502–504
·Also see highlight: Organic Chemistry Portal: January 30th, 2017

(12) "Using *N*-Nitroso-Dichloroacetamides to Conveniently Convert Linear Primary Amines into Alcohols"
%N. S. MacArthur, @L. Wang, %B. G. McCarthy, *C. E. Jakobsche
Synth. Commun. **2015**, *45*, 2014–2021

(11) "Overcoming the Inherent Alkylation Selectivity of 2–3-trans-3–4-cis-Trisubstituted Cyclopentanones"
@M. B. Reardon, %G. W. Carlson, *C. E. Jakobsche
Synthesis **2014**, *46*, 387–393

Peer-Reviewed Review Articles from Work Done at Clark University

(10) "6-Hydroxynorleucine: Syntheses and Applications of a Versatile Building Block" (Invited Review)
%N. S. MacArthur, *C. E. Jakobsche
Org. Prep. Proc. Int. **2017**, *49*, 480–513

Other Review Articles from Work Done at Clark University

(9) "Biochemical Effects of Meditation: A Literature Review"
%W. C. Daube, *C. E. Jakobsche
Scholarly Undergraduate Research Journal **2015**, *1*, 80–85

Peer-Reviewed Research Articles from Work Done as a Postdoctoral Researcher

(8) "Exploring Binding and Effector Functions of Natural Human Antibodies Using Synthetic Immunomodulators"
C. E. Jakobsche, C. G. Parker, R. N. Tao, M. D. Kolesnikova, E. F. Douglass, *D. A. Spiegel
ACS Chem. Biol. **2013**, *8*, 2484–2492
·Also see highlight: *ACS Chem. Biol.* **2013**, *8*, 2349

(7) "Reprogramming Urokinase into an Antibody-Recruiting Anticancer Agent"
C. E. Jakobsche, P. J. McEnaney, A. X. Zhang, *D. A. Spiegel
ACS Chem. Biol. **2012**, *7*, 316–321
·Also see spotlight: "Best of chemical biology 2012" *ACS Chem. Biol*. **2013**, *8*, 6
·Also see highlight: *ACS Chem. Biol.* **2012**, *7*, 246

Patents from Work Done as a Postdoctoral Researcher

(6) "Reprogramming Urokinase into an Antibody-Recruiting Anticancer Agent"
*D. A. Spiegel, C. E. Jakobsche
World Patent Application: WO 2013/070688-A1, May 16, 2013

Peer-Reviewed Research Articles from Work Done as a Graduate Student

(5) "$n \rightarrow \pi^*$ Interaction and $n)(\pi$ Pauli Repulsion Are Antagonistic for Protein Stability"
C. E. Jakobsche, A. Choudhary, S. J. Miller, *R. T. Raines
J. Am. Chem. Soc. **2010**, *132*, 6651–6653

(4) "Functional Analysis of an Aspartate-Based Epoxidation Catalyst with Amide-to-Alkene Peptidomimeic Catalyst Analogues"
C. E. Jakobsche, G. Peris, *S. J. Miller
Angew. Chem., Int. Ed. **2008**, *47*, 6707–6711
·Also see highlight: *Angew. Chem., Int. Ed.* **2008**, *47*, 3677
·Also see: *Synfacts*, **2008**, 1100

(3) "Selective Partial Reduction of Quinolines: Hydrosilation versus Transfer Hydrogenation"
A. Voutchkova, D. Gnanamgari, C. E. Jakobsche, C. Butler, S. J. Miller, J. Parr, *R. H. Crabtree
J. Organomet. Chem. **2008**, *693*, 1815–1821

(2) "Aspartate-Catalyzed Asymmetric Epoxidation Reactions"
G. Peris, C. E. Jakobsche, *S. J. Miller
J. Am. Chem. Soc. **2007**, *129*, 8710–8711
·Also see "Organo- and Biocatalysis Synfact of the Month:" *Synfacts*, **2007**, 983
·Also see highlight: *Angew. Chem., Int. Ed.* **2008**, *47*, 3677–3679

Peer-Reviewed Research Articles from Work Done as an Undergraduate

(1) "A Versatile Route to Benzocanthinones"
*J. H. Markgraf, A. D. Dowst, L. A. Hensley, C. E. Jakobsche, C. J. Kaltner, P. J. Webb, P. W. Zimmerman
Tetrahedron, **2005**, *61*, 9102–9110
·Also see: *Synfacts*, **2006**, 27

Research Conference Presentations

·Gordon Research Conference in Drug Resistance (Smithfield, RI) (poster, 2018)
"Towards the Synthesis of a Natural-Product-Inspired Bicyclic Terpenoid with Anti-MRSA Activity"
·Gordon Research Conference in Natural Products (Andover, NH) (poster, 2017)
"Towards a bicyclic diterpenoid with anti-MRSA activity: Methodology, applications, and orbital mixing"
·American Chemical Society's National Meeting (Philadelphia, PA) (organic chem. session talk, 2016)
"Cyclopentanone alkylations: Synthetic studies towards diterpenoid bicyclic core structures"
·Gordon Research Conference in Bioorganic Chemistry (Andover, NH) (poster, 2016)
"Activity-based protein profiling and inhibitor development of amine oxidases"
·American Chemical Society's Northeast Regional Meeting (Ithaca, NY) (organic chem. session talk, 2015)
"Converting primary amines into alcohols via *N*-nitrosodichloroacetamides"
·Gordon Research Conference in Bioorganic Chemistry (Andover, NH) (poster, 2013)
"Designing synthetic organic molecules that enable the human immune system to identify and kill metastatic cancer cells"
·Drug Discovery & Therapy World Congress (Boston, MA) Hot Topics in Medicinal Chemistry Session (2013)
"Designing synthetic molecules that direct the human immune system to identify and destroy cancer cells"
·American Chemical Society's National Meeting (Denver, CO) (poster, 2011)
"Small molecules for redirecting immune responses against cancer cells"

Invited Research Seminars

·Hamilton College (NY) Department of Chemistry (2018)
·University of Massachusetts, Dartmouth (MA) Department of Chemistry (2017)
·Williams College (MA) Department of Chemistry (2017)
·Wellesley College (MA) Department of Chemistry (2017)
·Bowdoin College (ME) Department of Chemistry (2017)
·Wesleyan University (CT) Department of Chemistry (2017)
·University of Rhode Island (RI) Department of Chemistry (2016)
·University of Rochester (NY) Department of Chemistry (2016)
·College of the Holy Cross (MA) Department of Chemistry (2015)
·University of Vermont (VT) Department of Chemistry (2015)
·Brooklyn College (NY) Department of Chemistry (2015)
·Merrimack College (MA) Department of Chemistry (2014)
·Bridgewater State University (MA) Department of Chemistry (2013)
·Providence College (RI) Department of Chemistry (2012)
·Rowan University (NJ) Department of Chemistry (2012)
·Clark University (MA) Department of Chemistry (2011)
·Yale University (CT) Center for Genomics and Proteomics: Joint Seminar Series (2008)
·Yale University (CT) Department of Chemistry: Bristol–Myers–Squibb Symposium (2008)

Academic Honors and Awards

·Ruth L. Kirschstein Postdoctoral Fellowship: National Institute of Health: National Cancer Institute (2011–2012)
·Postdoctoral Scholar Travel Fund Award: Yale University Office for Postdoctoral Affairs (2011)
·Leslie Warner Postdoctoral Fellowship: Yale University Cancer Center (2010–2011)
·Richard Wolfgang Prize for Top Ph.D. Thesis: Yale University Department of Chemistry (2010)
·T. F. Cooke Award for Teaching Assistant Excellence: Yale University Department of Chemistry (2008)
·Class of 1960's Scholar: Williams College Department of Chemistry (2002)
·Summer Travel Fellowship: Williams College Department of Chemistry (2002)
·Top Chemistry Student: Concord–Carlisle Regional High School (2000)

Research Funding Received

While a Postdoctoral Researcher

"A method to direct the human immune system against metastatic cancer cells"
Ruth L. Kirschstein Postdoctoral Fellowship, National Institute of Health (NCI)
Role: PI, Status: Funded, Total Funds: $150,234 (3 years, 2011–2012)

"A method to direct the human immune system against metastatic cancer cells"
Leslie H. Warner Postdoctoral Fellowship, Yale University Cancer Center
Role: PI, Status: Funded, Total Funds: $42,000 (1 year, 2010–2011)

Team / Departmental Grants from External Sources at Clark

·Sherman Fairchild Grant (to fund undergraduate research in STEM departments):
Sherman Fairchild Foundation
Role: One of several project mentors
Status: Funded, Total Funds: $250,000 (3 years, 2016–2018, supports undergraduate summer stipends)

From Competitive Internal Sources at Clark

"Developing potent and selective chemical inhibitors of the lysyl oxidase enzyme"
Faculty-Sponsored LEEP Project, Clark University LEEP Center
Role: PI, Status: Funded, Total Funds: $5,000 (summer 2017, supported 2 undergraduate stipends)

"Developing molecular probes to analyze cancer-relevant enzymes"
Faculty-Sponsored LEEP Project, Clark University LEEP Center
Role: PI, Status: Funded, Total Funds: $3,250 (summer 2016, supported 1 undergraduate stipend)

"Developing new molecules to fight drug-resistant bacteria"
Faculty-Sponsored LEEP Project, Clark University LEEP Center
Role: PI, Status: Funded, Total Funds: $6,000 (summer 2015, supported 2 undergraduate stipends)

"Chemical synthesis of novel anti-cancer medicines"
Faculty-Sponsored LEEP Project, Clark University LEEP Center
Role: PI, Status: Funded, Total Funds: $6,000 (summer 2014, supported 2 undergraduate stipends)

Courses Taught at Clark University

Semester	Number	Course Name	Number of Students	Student Evaluation (out of 5)	Contact Hours Per Week
Fall 2012	CHEM 132	Organic Chemistry II	8	4.6	5
Fall 2012	CHEM 132-Lab	Organic Chemistry II Lab	8	4.6	4
Spring 2013	CHEM 131	Organic Chemistry I	24	4.7	5
Spring 2013	CHEM 131-Lab	Organic Chemistry I Lab	24	4.7	4
Fall 2013	CHEM 132	Organic Chemistry II	22	4.8	5
Fall 2013	CHEM 132-Lab	Organic Chemistry II Lab	22	4.8	4
Fall 2013	CHEM 131-Lab	Organic Chemistry I Lab (2 sections)	25+22	---	8
Spring 2014	CHEM 131	Organic Chemistry I	24	4.5	5
Spring 2014	BCMB 237/337	Chemistry & Biology of Medicine	19	4.1	5
Fall 2014	CHEM 131	Organic Chemistry I	55	4.5	5
Fall 2014	CHEM 132-Lab	Organic Chemistry II Lab	15	4.7	4
Spring 2015	BCMB 237/337	Chemistry & Biology of Medicine	19	4.6	5
Spring 2015	CHEM 132-Lab	Organic Chemistry II Lab (2 sections)	24+21	4.4	8
Fall 2015	*Sabbatical*	---			
Spring 2016	CHEM 132-Lab	Organic Chemistry II Lab (3 sections)	18+19+17	4.3	12
Spring 2016	CHEM 233/333	Synthetic Organic Chemistry	6	3.8	5
Fall 2016	CHEM 131	Organic Chemistry 1	65	4.1	5
Fall 2016	CHEM 289/389	Scientific Writing & Commun. (1/4 unit)	14	4.5	1
Spring 2017	CHEM 132	Organic Chemistry II	52	4.3	5
Spring 2017	BCMB 237/337	Chemistry & Biology of Medicine	15	4.7	5
Fall 2017	CHEM 233/333	Synthetic Organic Chemistry	8	4.4	5
Fall 2017	*Course Buyout*	---			
Spring 2018	CHEM 132	Organic Chemistry II	31	4.2	5
Spring 2018	BCMB 237/337	Chemistry & Biology of Medicine	8	4.3	5
Fall 2018	CHEM 131	Organic Chemistry I	80		5
Fall 2018	CHEM 131-Lab	Organic Chemistry I Lab (2 sections)	22 + 22		8
Fall 2018	CHEM 289/389	Scientific Writing & Commun. (1/4 unit)	16		1
Spring 2019	*Sabbatical*	---			

- 100 and 200-level courses are for undergraduates. 300-level courses are for graduate students.
- CHEM = chemistry, BCMB = biochemistry and molecular biology
- Unless noted otherwise, all courses are full 4-credit courses. Labs are counted as 1/2 a teaching unit.
- For lab courses, the professor teaches the pre-lab and oversees the in-lab time, but there is a TA to assist and to grade lab reports. For lecture courses, there are no TAs and the professor does all the grading.

New Courses Created at Clark University

BCMB 237/337	Chemistry & Biology of Medicine
CHEM 289/389	Scientific Writing & Communication

Courses Fully Redesigned at Clark University

CHEM 131	Organic Chemistry I
CHEM 132	Organic Chemistry II
CHEM 233/333	Synthetic Organic Chemistry

Courses Partially Redesigned at Clark University

CHEM 131-Lab	Organic Chemistry I

Research Students Mentored at Clark

Semester	Total Students	Graduate Students	Undergraduates
Fall 2012	4	1 Ph.D.	3 (2 for directed study)
Spring 2013	5	1 Ph.D.	4 (1 for directed study)
Summer 2013	5	1 Ph.D.	4
Fall 2013	7	2 Ph.D.	5 (1 for directed study)
Spring 2014	6	2 Ph.D.	4 (2 for directed study)
Summer 2014	6	2 Ph.D.	4
Fall 2014	8	2 Ph.D.	6 (2 for honors, 2 for directed study)
Spring 2015	9	2 Ph.D.	7 (2 for honors, 2 for directed study)
Summer 2015	7	2 Ph.D.	5
Fall 2015	8.5*	2.5* Ph.D.	6 (2 for honors, 2 for directed study)
Spring 2016	10	2 Ph.D. + 1 M.A.	7 (2 for honors, 3 for directed study)
Summer 2016	8	2 Ph.D. + 3 M.A.	3
Fall 2016	7	2 Ph.D. + 2 M.A.	3 (1 for honors, 1 for directed study)
Spring 2017	8	2 Ph.D. + 2 M.A.	4 (1 for honors)
Summer 2017	6	1 Ph.D. + 2 M.A.	3
Fall 2017	4	1 Ph.D.	3 (1 for directed study)
Spring 2018	3	1 Ph.D.	2 (2 for directed study)
Summer 2018	3	1 Ph.D.	2
Fall 2018	3	1 Ph.D.	2 (1 for honors, 1 for directed study)

*0.5 = a co-advised student

List of Graduate Research Students Mentored at Clark

Students (5)	Next Position
Michael Reardon (2012–2017, CHEM, Ph.D.)	Visiting Asst. Prof. at Union College, NY
Linshu Wang (2013–2016, CHEM, M.S.)	Research Scientist at Radikal Therapeutics, MA
Muyun (Tony) Xu (2015–present, CHEM, Ph.D. program)	
Ashley Burke (2016–2017, BCMB, M.S.)	Research Scientist at Novartis, MA
Alex Wall (2016–2017, BCMB, M. S.)	Reagent Scientist at Alere, ME

List of Undergraduates Research Students Mentored at Clark

Students (17)	Next Position:
Spencer Brightman (2012, BIOL, directed study)	Biology Department
George Carlson (2012–2013, CHEM, directed study)	3/2 Engineering dual degree program at Columbia U.
Brooke Yasgur (2012–2014, BCMB, directed study)	Masters program in human nutrition at Columbia U.
Blaine McCarthy (2012–2015, CHEM, Highest Honors)	Ph.D. program in chemistry at U. Colorado, Boulder
P. George Baumgartel (2013–2015, CHEM, High Honors)	Ph.D. program in chemistry at Colorado State, Ft. Collins
Nicholas MacArthur (2013–2016, CHEM, Highest Honors)	Ph.D. program in chemistry at Princeton University
William Conner Daube (2014, CHEM, directed study)	Research Scientist at Aerodyne Research, MA
Danielle Augur (2014–2016, CHEM, ID, directed study)	Regulatory Affairs Assoc. at Molecular NeuroImaging, CT
Ashley Burke (2013–2016, BCMB, High Honors)	5th Year Masters Program, Clark University
Alex Wall (2015–2016, BCMB, directed study)	5th Year Masters Program, Clark University
Devon Fontaine (2015–2017, CHEM, Highest Honors)	Research Scientist at PCI Synthesis Inc., MA
Maria Solares Bucaro (2015–2017, BCMB, directed study)	Ph.D. program in biomedical sciences at Virginia Tech
Rachel Donnelly-Cokinos (2016, CHEM, ID)	International Development Department
Joseph McElwee (2017, BCMB, PSYC, directed study)	Premed Program
Luke Barrows (2017–present, BCMB, directed study)	
Saadman Islam (2017, BCMB, directed study)	Other Interests
Anh-Vy Le (2018–present, BCMB, directed study)	

·CHEM = chemistry major, BCMB = biochemistry and molecular biology major, BIOL = biology major, ID = international development major, PSYC = psychology

Teaching Experience before Clark

·Chemistry Tutor, Williams College Math and Science Resource Center (Fall 2003 and Spring 2004)
Freshman general and physical chemistry
·Teaching Assistant, Boston College with Professor Neil Wolfman (Fall 2004)
Freshman general chemistry (Discussion section leader)
·Teaching Assistant, Wilbur Cross Public High School, New Haven, CT with Mr. Chris Willems (Fall 2006)
Honors physical science (Volunteer classroom and laboratory assistant)
·Teaching Assistant, Yale University with Professor J. Michael McBride (Spring 2007)
Honors freshman organic chemistry (Discussion section leader)
·Teaching Assistant, Yale University with Professor J. Michael McBride (Fall 2007)
Honors freshman organic chemistry (Discussion section leader)
T. F. Cook Award for teaching assistant excellence
·Teaching Assistant, Yale University with Professor Frederick Ziegler (Spring 2008)
Honors freshman organic chemistry (Discussion section leader)
·Teaching Fellow, Yale University with Professor David Spiegel (Fall 2008)
Graduate-level mechanistic organic chemistry (Discussion section leader)

Professional Service as a Scientific Reviewer

·Bioorganic & Medicinal Chemistry
·European Journal of Organic Chemistry
·Journal of Chemical Education
·Journal of the American Chemical Society
·Journal of Bioactive and Compatible Polymers
·Tetrahedron
·The Journal of Organic Chemistry

·American Chemical Society's Petroleum Research Fund
·City University of New York (CUNY)'s Research Grant Program

·External reviewer for a tenure application from a liberal arts college in New England (anonymous for confidentiality)

Service on Clark University Committees & Leadership Positions

·Undergraduate Academic Board: Natural sciences faculty representative (one-semester term, spring 2018)
·Undergraduate Academic Board: Natural sciences faculty representative (3-year term, 2018–2021)

·Health, Science, and Society Concentration (formerly called "Public Health"): Codirector (spring 2018–present)
Spearheaded the creation and development of the new HSS concentration from the old PH concentration

·Library Committee: Natural sciences faculty representative (3-year term, 2013–2016)
Committee Chair: 2014–15

·Self Study Preparation Committee: Standards Committee #5 member (2014–2015)
To prepare for Clark's 2015 Reaccreditation

Additional Service to Clark University

·Head Organizer and Host for the Harry C. Allen Jr. Symposium (2014)
Symposium title: "The intersection of organic chemistry, biology, and medicine"
This full-day event included three guest speakers and a multi-university student poster session

·Faculty Random Lunches Initiative: Founder and Organizer (2015–present)
To encourage informal interdepartmental interactions

Service Awards

·Recognition as an outstanding supporter of Clark student athletes: Clark Student Athlete Advisory Committee (2016)

Professional Memberships

·Member of the American Chemical Society (2006–present)

Involvement in the Worcester and New England Communities

·WGBH New England Public Broadcasting: Member and WCRB Classical Radio Sustainer (2013–present)
·Providence WaterFire Event: Invited Argentine Tango Performer (2015, 2016)
·Worcester Regional Science & Engineering Fair: Biology Judge for High School Level (2014)
·Worcester Argentine Tango Club: Class Instructor and Co-organizer (2013–2014)

Other Awards

·National Collegiate Athletic Association (NCAA) All-America Award (Div. III Track & Field, 4x400 meters, 2001)
·National Collegiate Athletic Association (NCAA) All-America Award (Div. III Track & Field, 4x100 meters, 2004)