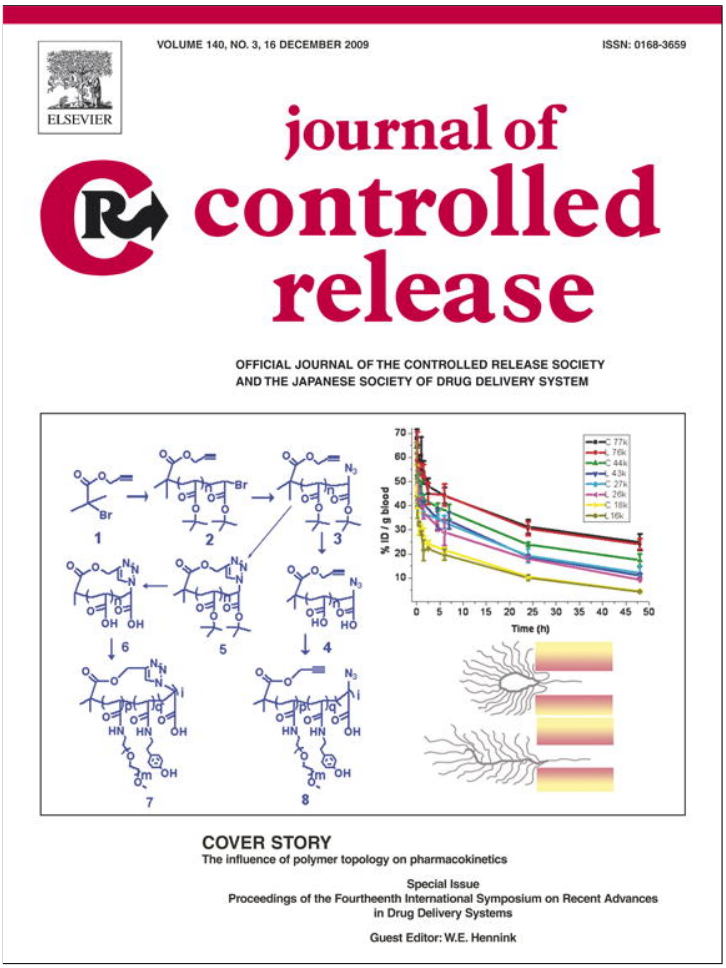

Journal of Controlled Release 140 (2009) 183–184

Contents lists available at ScienceDirect

Journal of Controlled Release

journal homepage: www.elsevier.com/locate/jconrel

Preface

The 14th International Symposium on Recent Advances in Drug Delivery Systems, February 15–18, 2009, Salt Lake City, UT, USA

The current debate over health care costs, affordability and efficacy, combined with the key patent expirations for numerous blockbuster drugs in many categories, unprecedented low forecasts for new drug approvals, surges in biotech drugs and regenerative medicine advances, increasing antibiotic resistance, the entry of personalized medicine, persistence of nanotechnology, and global influenza pandemic threats all provide a diverse, opportune stage for touting the strategic benefits for modern drug delivery to modern healthcare. Methods for drug targeting, controlled release and advanced drug delivery all have utility in these as well as many other critical therapeutic arenas. The questions are how, when and in what specific technology and clinical areas will new controlled release technologies actually deliver (pun intended)? Scientifically, the field of drug delivery continues to excite, attempting to address long-standing challenges as well as new, emerging issues with innovation and solid technical solutions. Commercially, the field appears highly competitive and extremely selective, embracing only those drug delivery technologies with appropriate market and strategic value. Each drug and clinical indication builds its own case for appropriate controlled release or custom targeting use — there is no one-size-fits-all platform or strategy.

The recent passing of recognized pioneers to the field, Joe Robinson and Jorge Heller, reminds us that the field, now maturing toward a half-century of intensive development, is scientifically immense, and continuously broadened with new contributions offered from genetics, developmental biology, medicine, oncology, immunology, and infectious disease. This situation mandates a dedicated, common venue to facilitate exchange of ideas, concepts, breakthrough developments and scientific approaches. The world's longest running dedicated conference venue in this drug delivery focus area — the *International Symposium on Recent Advances in Drug Delivery Systems* — has strived to fill this need for nearly three decades. Fourteen biennial symposia have featured the leading creative minds in the field, from both academia and industry, to identify both challenges and solutions to modern therapeutic needs, and future projections. The Salt Lake City, USA-based meeting offers scientific programming that stimulates cross-disciplinary thinking and scientific infusions from many diverse fields to advance the drug delivery agenda. Audiences from medicine, microbiology, pharmaceutics, chemical engineering and bioengineering backgrounds produce a rich forum for exchange, debate and open discussion.

Surging global interest in nano-biotechnology, nanomedicine, bio-based therapeutics, novel biomaterials, stem cells and tissue engineering (i.e., using growth factor and cell delivery methods), biomedical imaging innovations (i.e., new "see-and-treat" modalities) and molecular therapeutics all provide interesting new advances and options for innovating and applying drug delivery strategies. The impact of this rapid thematic drug delivery growth is evidenced in the spread of this theme: it is now routine to find drug delivery sessions involving biotechnology, bio-imaging, sensing, biomaterials, drug delivery and tissue engineering at annual society meetings and also specialized commercial focus and technology licensing groups. New research funding opportunities typically are offered internationally in these areas, and increasing numbers of start-up business seek to exploit the latest advances with innovative new product ideas. To effectively negotiate this increasingly complex intellectual territory requires minimal understanding of drug design, pharmaceutical bioavailability, molecular biology, physiological systems, mass transport, and pharmacology, in addition to other specialized methods (e.g., immunology, pathology, nanomaterials, polymer chemistry, medical imaging modalities, among others). Unsolved technical issues in improving new drug introductions through better formulating, drug dosing, targeting and delivering challenge drug therapeutic efficacy. These issues are technically complex and cross-disciplinary such that no single sub-specialty effectively addresses them alone. Team efforts focused on the issues are critical. Hence, forums for presenting, discussing and arguing the relevant modern problems, issues, and possible creative, new solutions exist. Yet these often cannot produce the optimal selections or diversity of expertise in essential critical masses of experts for consensus building.

The *Recent Advances in Drug Delivery* international symposium series fills this gap in scientific culture with its intensive single-track technical offerings in drug delivery methods, biotechnology, biomaterials and bio-conjugation progress, therapeutics and image agent targeting and drug design, addressing significant opportunities. The biennial Symposium traditionally recruits the field's thought-leaders across multiple themes for 3 days, publishing a dedicated peer-reviewed select proceedings technical volume as a reference text (earlier Plenum and Elsevier volumes) or more recently as special peer-review issues in the *Journal of Controlled Release*. The meeting program, deliberately controlled by the program co-chairs under direction of the scientific advisory committee, assures specific, up-to-date technical coverage, quality, format and renowned contributors. This facilitates focus on the drug delivery arena's most recent developments, controversies and contributions. The pioneering high-quality content, single-track drug delivery meeting is now partnered in alternating years with the European Symposium on Controlled Drug Delivery (Noordwijk aan Zee, NL) meeting in similar theme.

The theme for the *Fourteenth International Symposium on Recent Advances in Drug Delivery Systems* (2009) was "drug carriers: progress beyond delivery". The program sought to collect design and performance aspects of sophisticated drug delivery materials and

0168-3659/$ – see front matter
doi:10.1016/j.jconrel.2009.09.006

strategies that have now been extended to and adopted in biomedical imaging, nanomedicine, and ancillary biomedical technologies. Lessons learned from targeted therapeutics now find applications in other in vivo technologies. A strong central emphasis also remained on popular polymer-based therapeutics, ideas for penetrating cellular and tissue barriers, more effective drug targeting, drug resistance mechanisms, and specific disease therapies. All oral sessions were spearheaded by world-renowned pharmaceutical scientists, bioengineers, industrial scientists, and clinicians all seeking solutions to compelling drug delivery problems. This particular meeting was dedicated to the notable creative scientific contributions of Japanese professor Teruo Okano on the occasion of his 60th birthday. Once again, meeting co-chairs — K. Park (Purdue), Y-H Bae (Utah) and D.W. Grainger (Utah) — attempted to: 1) promote a rich, diverse scientific program focusing on both fundamental and clinical challenges limiting drug therapeutic efficacy in several important disease contexts (i.e., traversing the hurdles of translational research), as well as nanotoxicity, molecular imaging, and regenerative medicine problems; and 2) gather presenters and participants comprising recognized scientists and thought-leaders as well as younger, vibrant faculty and research trainees already noted for novel and quality work. Speakers and session chairs represented both academic and commercial drug delivery efforts, providing valuable mixed perspectives and leadership from both basic research, product development and clinical applications. Significantly, meeting sponsorship, critical to its success, included top-tier Samyang Company and NOF Corporation, major contributors Icure Pharmaceutical, Nitto Denko, CibaVision, Cheil Jedang, and Asahi Kasei, supporters Covidien, Roche, Shiseido, and Green Cross, and further generosity from Nanocarrier, CellSeed, Rexahn Pharamceuticals, E-gen, Regeron, and Teikoku Seiyaku. These generous donors, along with the University of Utah, are gratefully acknowledged for enabling the meeting.

Oral technical sessions featured 31 invited speakers from international industry and academia across 9 topical technical sessions, and a single (crowded) poster session. Specific technical session themes include *nanotoxicity, novel chemistry, intracellular trafficking, biomimetic materials, novel delivery systems, nanomedicine, regenerative medicine, and gene and siRNA delivery*. A special session was dedicated to scientific, philosophical and humorous reflections on the illustrious career of Prof. Teruo Okano, and his unique applications of thermally sensitive polymers in biomedical applications. Prof. Kinam Park hosted a fitting dinner "roast" of Prof. Okano with several international contributors to the tribute. Peer-reviewed manuscripts (18 full original articles plus one review) from these various oral sessions, plus several full papers invited from the award-winning poster contributions are featured in this current volume of *J. Controlled Release* Journal editor Wim Hennink (Utrecht, NL) has assembled a broad spectrum of quality topical coverage in this dedicated symposium volume once again to yield a quality journal issue. The symposium volumes of *J. Controlled Release* are traditionally among the most cited of the journal's history. This one will be no exception. Please enjoy these contents!

We thank the University of Utah host organizational team, student assistants, and dedicated, generous sponsors for establishing the quality "benchmark" for this symposium series. The fifteenth symposium is now in planning for 2011 in Salt Lake City, USA (e-mail: symposium@pharm.utah.edu; URL http://www.drugdeliverysymposium.utah.edu). Mark your calendars and join us at this center of activity for the controlled release and drug delivery field.

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