LACTEL Absorbable Polymers

Recent References on the Application of LACTEL® Absorbable Polymers in Drug Delivery

L00404 Golan-Paz S, Frizzell H, Woodrow KA. Cross-Platform Comparison of Therapeutic Delivery from Multilamellar Lipid-Coated Polymer Nanoparticles. Macromolecular bioscience 2019; 19(4):1800362. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated - MW 52-54 kDa, IV 0.55-0.75 dL/g; Drug delivery (nanoparticles: etravirine, azidothymidine, BSA, GFP plasmid); encapsulation efficiencies explored for each agent.

L00403 Filipovic N, Veselinovic L, Razic S, Jeremic S, Filipic M, Zegura B et al. Poly (e-caprolactone) microspheres for prolonged release of selenium nanoparticles. Materials Science and Engineering: C 2019; 96:776-789. >>> Poly(e-caprolactone); Drug delivery (microspheres, selenium);

L00396 Park SC, Kim MJ, Baek SK, Park JH, Choi SO. Spray-Formed Layered Polymer Microneedles for Controlled Biphasic Drug Delivery. POLYMERS 2019; 11(2):369. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated; IV 0.26-0.54 dL/g; Drug delivery (bovine serum albumin);

L00405 Gao Y, Vijayaraghavalu S, Stees M, Kwon BK, Labhasetwar V. Evaluating accessibility of intravenously administered nanoparticles at the lesion site in rat and pig contusion models of spinal cord injury. Journal of Controlled Release 2019; 302:160-168. >>> 50:50 Poly(DL-lactide-co-glycolide), IV 0.76-0.94 dL/g; Drug delivery (nanoparticles); rat (Sprague-Dawley), pig (Yucatan mini);

L00408 Seo YE, Suh HW, Bahal R, Josowitz A, Zhang J, Song E et al. Nanoparticle-mediated intratumoral inhibition of miR-21 for improved survival in glioblastoma. Biomaterials 2019; 201:87-98. >>> Poly(L-lactide) - Mw 20.2 kDa; Drug delivery (nucleic acids); rat (Fischer 344);

L00407 Moku G, Layek B, Trautman L, Putnam S, Panyam J, Prabha S. Improving Payload Capacity and Anti-Tumor Efficacy of Mesenchymal Stem Cells Using TAT Peptide Functionalized Polymeric Nanoparticles. Cancers 2019; 11(4):491. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated - IV 0.55-0.75 dL/g; Drug delivery (nanoparticles, paclitaxel); mice; drug loading: 15-16 % w/w.

L00406 Mahmoud MY, Steinbach-Rankins JM, Demuth DR. Functional assessment of peptide-modified PLGA nanoparticles against oral biofilms in a murine model of periodontitis. Journal of Controlled Release 2019; 297:3-13. >>> 50:50 Poly(DL-lactide-co-glycolide) - IV 0.55-0.75 dL/g; Drug delivery (nanoparticles: BAR peptide); mice (BALB/cByJ);

L00395 Angsantikul P, Thamphiwatana S, Zhang Q, Spiekermann K, Zhuang J, Fang RH et al. Coating nanoparticles with gastric epithelial cell membrane for targeted antibiotic delivery against helicobacter pylori infection. Advanced therapeutics 2018; 1(2):1800016. >>> 50:50 Poly(DL-lactide-co-glycolide) acid terminated; IV 0.67 dL/g, MW approx 44 kDa; Drug delivery (clarithromycin, PO); mice; polymer was mixed with human gastric adenocarcinoma membrane vesicles, polymer polydispersity approx 2.

L00394 Ricciardi AS, Bahal R, Farrelly JS, Quijano E, Bianchi AH, Luks VL et al. In utero nanoparticle delivery for site-specific genome editing. Nature communications 2018; 9(1):2481. >>> 50:50 Poly(DL-lactide-co-glycolide) ester; IV 0.55-0.75 dL/g; Drug delivery (nucleic acids, DNA, C6 dye, DiD dye); mice; targeted delivery (intrauterine); biocompatibility: "...we observed no significant differences in the long-term survival between untreated mice and those that received NP treatment in utero.".

L00398 Kovarova M, Benhabbour SR, Massud I, Spagnuolo RA, Skinner B, Baker CE et al. Ultra-long-acting removable drug delivery system for HIV treatment and prevention. Nature communications 2018; 9(DOI: 10.1038/s41467-018-06490-w). >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated; MW 27 kDa; Drug delivery (SC, dolutegravir); mice (BLT humanized), primate (rhesus macaque); antiretroviral; biocompatibility (mice): "The formulation was well tolerated by the mice and no injection site reactions or other signs of overt toxicity, changes in behavior, movement, water consumption or weight loss were noted." biocompatibility (primate): "The implants were well tolerated with little or no sign of toxicity for 5 months.".

L00397 Nabar GM, Mahajan KD, Calhoun MA, Duong AD, Souva MS, Xu J et al. Micelle-templated, poly (lactic-co-glycolic acid) nanoparticles for hydrophobic drug delivery. International Journal of Nanomedicine 2018; 13:351. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated; MW 50-70 kDa; Drug delivery (dexamethasone); electrospraying.

L00388 Mesquita PC, dos Santos Silva E, Streck L, Damasceno IZ, Maia AMS, Fernandes-Pedrosa et al. Cationic functionalized biocompatible polylactide nanoparticles for slow release of proteins. Colloids and Surfaces A: physicochemical and Engineering Aspects 2017; 513:442-451. >>> Poly(DL-lactide); IV 0.67 dL/g at 25C; Drug delivery (nanoparticles, bovine serum albumin);

L00386 Aniagyei SE, Sims LB, Malik DA, Tyo KM, Curry KC, Kim W et al. Evaluation of poly(lactic-co-glycolic acid) and poly(DL-lactide-co-E-caprolactone) electrospun fibers for the treatment of HSV-2 infection. Materials Science and Engineering C 2017; 72:238-251. >>> 50:50 Poly(DL-lactide-co-glycolide) acid terminated; IV 0.55-0.75 dL/g, MW 31-57 kDa; Drug Delivery (acyclovir); electrospinning.

L00385 Ahmed T, Aljaeid B. A potential in situ gel formulation loaded with novel fabricated poly(lactide-co-glycolide) nanoparticles for enhancing and sustaining the ophthalmic delivery of ketoconazole. International Journal of Nanomedicine 2017; 12:1863-1875. >>> Poly(DL-lactide-co-glycolide) ester terminated; IV 0.55-0.75 dL/g; Drug delivery (ketoconazole); targeted delivery (eye).

L00389 Patel B, Rashid J, Ahsan F. Aerosolizable modified-release particles of montelukast improve retention and availability of the drug in the lungs. European Journal of Pharmaceutical Sciences 2017; 96:560-570. >>> Poly(DL-lactide) - IV 0.55-0.75 dL/g, 85:15 Poly(DL-lactide-co-glycolide) - IV 0.55-0.75 dL/g, MW 85.2 kDa, 50:50 Poly(DL-lactide-co-glycolide) - IV 0.15-0.25 dL/g, MW 10.6 kDa; Drug delivery (montelukast, large respirable porous particles);

L00373 Kim DY, Kwon YD, Kwon JS, Park JH, Park SH, Oh HJ et al. Synergistic anti-tumor activity through combinational intratumoral injection of an in-situ injectable drug depot. Biomaterials 2016; 85:232-245. >>> 50:50 Poly(DL-lactide-co-glycolide); MW 33 kDa; Drug

delivery (microcapsules, doxorubicin); mice; Microcapsules were generated using a mono-axial nozzle ultrasonic atomizer; targeted delivery (tumor).

L00356 Hlavaty KA, McCarthy DP, Saito E, Yap WT, Miller SD, Shea LD. Tolerance induction using nanoparticles bearing HY peptides in bone marrow transplantation. Biomaterials 2016; 76:1-10. >>> 50:50 Poly(DL-lactide-co-glycolide); Drug delivery (particles, CD4 and CD8 peptide antigens); mice (C57/BL6); particles were prepared using a single emulsion technique.

L00375 Kobes JE, Daryaei I, Howison CM, Bontrager JG, Sirianni RW, Meuillet EJ et al. Improved Treatment of Pancreatic Cancer With Drug Delivery Nanoparticles Loaded With a Novel AKT/PDK1 Inhibitor. Pancreas 2016; 45(8):1158-1166. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated; IV 0.55-0.75 dL/g; Drug delivery (nanoparticles, chemotherapeutic PHT-427); PHT-427 is an AKT/PDK1 inhibitor.

L00377 Lee W, Park J. 3D patterned stem cell differentiation using thermoresponsive methylcellulose hydrogel molds. SCIENTIFIC REPORTS 2016; 6(29408):doi: 10.1038/srep29408. >>> 50:50 Poly(DL-lactide-co-glycolide) - MW 85 kDa, 65:35 Poly(DL-lactide-co-glycolide) - MW 95 kDa; Drug delivery (microparticles; microspheres were prepared through the double emulsion process (water-in-oil-in-water (w/o/w)).

L00376 Layek B, Sadhukha T, Prabha S. Glycoengineered mesenchymal stem cells as an enabling platform for two-step targeting of solid tumors. Biomaterials 2016; 88:97-109. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated; IV 0.95-1.2 dL/g; Drug delivery (nanoparticles, paclitaxel, near-infrared dye SDB 5491); mice; nanoparticles prepared by emulsion-solvent evaporation.

L00364 Manna S, Banerjee RK, Augsburger JJ, Al-Rjoub MF, Correa ZM. Ultrasonographical assessment of implanted biodegradable device for long-term slow release of methotrexate into the vitreous. Experimental Eye Research 2016; 148:30-32. >>> Poly(DL-lactide); IV 1.16 dL/g at 30C in chloroform; Drug delivery (implant, methotrexate); rabbit (New Zealand); targeted delivery (eye, vitreous).

L00346 D'Apolito R, Taraballi F, Minardi S, Liu X, Caserta S, Cevenini A et al. Microfluidic interactions between red blood cells and drug carriers by image analysis techniques. Medical Engineering and Physics 2016; 38:17-23. >>> 50:50 Poly(DL-lactide-co-glycolide); IV 0.95-1.20 dL/g; Drug delivery (microspheres); microspheres were prepared by a modified S/O/W emulsion method.

L00342 Adjei IM, Sharma B, Peetla C, Labhasetwar V. Inhibition of bone loss with surface-modulated, drug-loaded nanoparticles in an intraosseous model of prostate cancer. Journal of Controlled Release 2016; 232:83-92. >>> 50:50 Poly(DL-lactide-co-glycolide); IV 0.26–0.54 dL/g; Drug delivery (nanoparticles, paclitaxel, NIR dye SDB5700); mice (male, athymic, nude); Nanoparticles were prepared by a single oil-in-water emulsion solvent evaporation method.

L00332 Petro M, Jaffer H, Yang J, Kabu S, Morris VB, Labhasetwar V. Tissue plasminogen activator followed by antioxidant-loaded nanoparticle delivery promotes activation/mobilization of progenitor cells in infarcted rat brain. Biomaterials 2016; 81:169-180. >>> 50:50 Poly(DL-lactide-co-glycolide); IV 0.76-0.94 dL/g; Drug delivery (nanoparticles, superoxide dismutase, catalase); rat (male Sprague-Dawley); double-emulsion solvent-evaporation method

used for nanoparticle production; "delivery of nano-CAT/SOD at the time of reperfusion effectively protects neuronal cells" (pg. 178).

L00347 Dutta D, Salifu M, Sirianni RW, Stabenfeldt SE. Tailoring sub-micron PLGA particle release profiles via centrifugal fractioning. Journal of Biomedical Materials Research Part A 2016; 104A(3):688-696. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated; IV 0.55-0.75 dL/g; Drug delivery (sub-micron particles, bovine serum albumin); particles synthesized via a W/O/W technique.

L00378 Luk BT, Fang RH, Hu CMJ, Copp JA, Thamphiwatana S, Dehaini D et al. Safe and Immunocompatible Nanocarriers Cloaked in RBC Membranes for Drug Delivery to Treat Solid Tumors. Theranostics 2016; 6(7):1004-1011. >>> Poly(DL-lactide-co-glycolide) acid terminated; Drug delivery (nanoparticles, doxorubicin); mice; nanoparticles prepared by double emulsion method.

L00349 Wanawananona K, Moulton S, Wallaceban G, Liawruangrath S. Fabrication of novel core–shell PLGA and alginate fiber for dual-drug delivery system. Polym Adv Technol 2016; 27:1014-1019. >>> 50:50 Poly(DL-lactide-co-glycolide); Drug delivery (biodegradable fibers, dexamethasone); degradation profile available (pg 1018); filament processed by wet-spinning procedure.

L00390 Rescignano N, Tarpani L, Romani A, Bicchi I, Mattioli S, Emiliani C et al. In-vitro degradation of PLGA nanoparticles in aqueous medium and in stem cell cultures by monitoring the cargo fl uorescence spectrum. Polymer Degradation and Stability 2016; 134:296-304. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated - IV 0.95-1.20 dL/g, MW 91-120 kDa; Drug delivery (bovine serum albumin, nanoparticles);

L00392 Nadal-Nicolas FM, Rodriguez-Villagra E, Bravo-Osuna I, Sobrado-Calvo P, Molina-Martinez I, Villegas-Perez MP et al. Ketorolac Administration Attenuates Retinal Ganglion Cell Death After Axonal Injury. Investigative ophthalmology & visual science 2016; 57:1183-1192. >>> 85:15 Poly(DL-lactide-co-glycolide) - IV 0.62 dL/g, MW 87 kDa; Drug delivery (ketorolac, microspheres); targeted delivery (eye, vitreous).

L00387 Hernandez C, Gawlik N, Goss M, Zhou H, Jeganathan S, Gilbert D et al. Macroporous acrylamide phantoms improve prediction of in vivo performance of in situ forming implants. Journal of Controlled Release 2016; 243:225-231. >>> 50:50 Poly(DL-lactide-co-glycolide), acid terminated; MW 13.8 kDa; Drug delivery; rat;

L00391 Stankovic A, Sezen M, Milenkovic M, Kaisarevic S, Andric N, Stevanovic M. PLGA/Nano-ZnO Composite Particles for Use in Biomedical Applications: Preparation, Characterization, and Antimicrobial Activity. Journal of Nanomaterials 2016; 2016(Article ID 942528). >>> 50:50 Poly(DL-lactide-co-glycolide) - MW 40-50 kDa; Drug delivery (zinc composite nanoparticles);

L00355 Gwak SJ, Yun Y, Yoon DH, Kim KN, Ha Y. Therapeutic Use of 3B-[N-(N',N'-Dimethylaminoethane) Carbamoyl] Cholesterol-Modified PLGA Nanospheres as Gene Delivery Vehicles for Spinal Cord Injury. PloS one 2016; 11(1):1-14. >>> Poly(DL-lactide-co-glycolide); MW 66 kDa; Drug delivery (nanoparticles, pDNA); Rat; prepared using a double emulsion-solvent evaporation method; spinal cord injury; testing done on drug release, cytotoxicity, cellular uptake, and transfection.

L00379 Mi Y, Mu C, Wolfram J, Deng Z, Hu TY, Liu X et al. A Micro/Nano Composite for Combination Treatment of Melanoma Lung Metastasis. Advanced healthcare materials 2016; 5:936-946. >>> 50:50 Poly(DL-lactide-co-glycolide) acid terminated; IV 0.20 dL/g; Drug delivery (nanoparticles, docetaxel); mice;

L00354 Dutta, D, Salifu M, Sirianni R, Stabenfeldt S. Tailoring sub-micron PLGA particle release profiles via centrifugal fractioning. J Biomed Mater Res Part A 2016; 104(A):688-696. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated; IV 0.55-0.75 dL/g; Drug delivery (nanoparticles, in vitro, protein); particles were synthesized via a W/O/W emulsion technique; centrifugal fractioning used to control population distribution of particles.

L00352 Rahman S, Mahoney C, Sankar J, Marra K, Bhattarai N. Synthesis and characterization of magnesium gluconate containedpoly(lactic-co-glycolic acid)/chitosan microspheres. Materials Science and Engineering B 2016; 203:59-66. >>> 50:50 Poly(DL-lactide-co-glycolide) acid terminated; IV 0.15-0.25 dL/g; Drug delivery (nanoparticles, magnesium gluconate dihydrate); microspheres were fabricated by utilizing the double emulsion solvent evaporation technique with some modifications; "Cytotoxicity levels did not surpass the 15% cytotoxicity marker...which indicates sufficient biocompatibility" (pg. 64).

L00353 Gupta A, Sharma D, Meena J, Pandya S, Sachan M, Kumar S et al. Preparation and Preclinical Evaluation of Inhalable Particles Containing Rapamycin and Anti-Tuberculosis Agents for Induction of Autophagy . Pharm Res 2016; 33:1899-1912. >>> 50:50 Poly(DL-lactide-co-glycolide), IV 0.55-0.75 dL/g; Poly(L-lactide) IV 0.90-1.20 dL/g; Drug delivery (particles, rapamycin, isoniazid, rifabutin); mice (BALB/c); particles prepared by spray-drying; targeted delivery (lung).

L00348 Gavrilov K, Seo YE, Tietjen GT, Cui JJ, Cheng CJ, Saltzman WM. Enhancing potency of siRNA targeting fusion genes by optimization outside of target sequence. PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA 2015; 112:E6597-E6605. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated; IV 0.55-0.75 dL/g; Drug delivery (nanoparticles, siRNA); nanoparticles were prepared using a modified water-in-oil-in-water double-emulsion solvent evaporation technique.

L00319 Zamani M, Prabhakaran MP, Thian ES, Ramakrishna S. Controlled delivery of stromal derived factor-1alpha from poly lactic-co-glycolic acid core-shell particles to recruit mesenchymal stem cells for cardiac regeneration. Journal of Colloid and Interface Science 2015; 451:144-152. >>> 50:50 Poly(DL-lactide-co-glycolide); MW 31.3-57.6 kDa; Drug delivery (nanoparticles, stromal derived factor-1a); Coaxial electrospraying; sterilized using UV radiation.

L00325 Wang XP, Li W, Chen TN. Simulation and Experimental Validation of the Hot Embossing Process of Poly(lactic-co-glycolic acid) Microstructures. INTERNATIONAL JOURNAL OF POLYMER SCIENCE 2015;U1-U9. >>> 50:50 Poly(DL-lactide-co-glycolide); Drug delivery (mesh microstructure); microstructures were fabricated by hot embossing method; Elastic modulus testing at different temperatures.

L00313 Castro NJ, O'Brien J, Zhang LG. Integrating biologically inspired nanomaterials and table-top stereolithography for 3D printed biomimetic osteochondral scaffolds. Nanoscale 2015; 7:14010-14022. >>> Poly(DL-lactide-co-glycolide); Drug delivery (nanospheres, TGF-B1); Tissue engineering (scaffold); nanospheres fabricated by coaxial electrospraying; 3D printing of PLGA.

L00318 Zhan X, Shen H. Programming the composition of polymer blend particles for controlled immunity towards individual protein antigens. Vaccine 2015; 33:2719-2726. >>> 50:50 Poly(DL-lactide-co-glycolide); IV 0.55-0.75 dL/g; Drug delivery (nanoparticles, ovalbumin, Type 2 Herpes Simplex Virus glycoprotein D); C57BL/6 mice;

L00326 Vilos C, Velasquez LA, Rodas PI, Zepeda K, Bong SJ, Herrera N et al. Preclinical Development and In Vivo Efficacy of Ceftiofur-PLGA Microparticles. PloS one 2015; 10(4):U325-U343. >>> 50:50 Poly(DL-lactide-co-glycolide) acid-terminated; IV 0.26-0.54 dL/g; Drug delivery (nanoparticles, ceftiofur); Rat (Sprague-Dawley); Nanoparticles were prepared by double-emulsion method; sustained release profile of drug for 20 days.

L00334 Madsen CG, Skov A, Baldursdottir S, Rades T, Jorgensen L, Medlicott NJ. Simple measurements for prediction of drug release from polymer matrices - Solubility parameters and intrinsic viscosity. EUROPEAN JOURNAL OF PHARMACEUTICS AND BIOPHARMACEUTICS 2015; 92:1-7. >>> 50:50 Poly(DL-lactide-co-glycolide) acid terminated; MW 57.6 kDa; Drug delivery; Solubility parameters and intrinsic viscosity of PLGA in various solvents (pg. 4); cast with bovine serum albumin (BSA) as a model drug.

L00323 Wang XP, Lian K, Chen TN. Experiment Research on Bonding Effect of Poly(lactic-co-glycolic acid) Device by Surface Treatment Method. INTERNATIONAL JOURNAL OF POLYMER SCIENCE 2015;U1-U7. >>> 50:50 Poly(DL-lactide-co-glycolide); IV 0.55-0.75 dL/g; Drug delivery (film production); "excellent biocompatibility, biodegradability, lack of toxicity, and good thermoplasticity" (pg. 1); sterilization by UV radiation.

L00324 Wang F, Gao WW, Thamphiwatana S, Luk BT, Angsantikul P, Zhang QZ et al. Hydrogel Retaining Toxin-Absorbing Nanosponges for Local Treatment of Methicillin-Resistant Staphylococcus aureus Infection. Advanced Materials 2015; 27:3437-3443. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated; IV 0.67 dL/g; Drug delivery (nanoparticles, nanosponge, a-toxin); mice; produced through nanoprecipitation in acetone.

L00372 Jiang Y, Cao S, Bright DK, Bever AM, Blakney AK, Suydam IT et al. Nanoparticle-Based ARV Drug Combinations for Synergistic Inhibition of Cell-Free and Cell-Cell HIV Transmission. Molecular Pharmaceutics 2015; 12:4363-4374. >>> 50:50 Poly(DL-lactide-co-glycolide) ester terminated; IV 0.55-0.75 dL/g - MW 52-54 kDa; Drug delivery (nanoparticles, maraviroc, etravirine, raltegravir);

L00371 Jahan ST, Haddadi A. Investigation and optimization of formulation parameters on preparation of targeted anti-CD205 tailored PLGA nanoparticles. International Journal of Nanomedicine 2015; 10:7371-7384. >>> Poly(DL-lactide-co-glycolide) ester terminated - IVs 0.15 dL/g, 0.55 dL/g, Poly(DL-lactide-co-glycolide) acid terminated - IVs 0.18 dL/g, 0.55 dL/g; Drug delivery (nanoparticles, anti-CD205 antibodies); nanoparticles prepared by double solvent emulsification and single oil in water emulsification solvent evaporation methods.

L00370 Lopalco A, Ali H, Denora N, Rytting E. Oxcarbazepine-loaded polymeric nanoparticles: development and permeability studies across in vitro models of the blood-brain barrier and human placental trophoblast. International Journal of Nanomedicine 2015; 10:1985-1996. >>> 50:50 Poly(DL-lactide-co-glycolide); IV 0.15-0.25 dL/g; Drug delivery (nanoparticles, oxcarbazepine); prepared at room temperature (22°C-23°C) by a modified solvent displacement method; particle size, size distribution, and zeta potential measurements (in vitro); drug release profile (pg. 1994).