References on the Administration of Liposomes
Using ALZET® Osmotic Pumps

Agents: Liposomes, fluorescently labeled; coatasome EL-01-C, hydrated Vehicle: DMSO; water, distilled; Route: Intrauterine; Species: Rabbit (fetus); Pump: 2ML1; Duration: 1 week;
ALZET Comments: Control animals received mp w/ liposome alone; animal info (Japanese, White, 4.2-5.4 kg, teen); tissue perfusion (fetus); "5-cm sterile PE 60 silicone catheter with silicone flange was attached to each pump" pg L209; Fig 2, image of pump and catheter placement; multiple pumps used (2); teratology.

Agents: Liposomes; FITC-dextran-lysine Vehicle: Saline; tris buffer; Route: CSF/CNS (caudate putamen); CSF/CNS (intratumoral); Species: Rat; Pump: 2001D; Duration: 24 hours;
ALZET Comments: Tissue perfusion (intratumoral); comparison of acute CSF/CNS injection vs. mp; half-life (p. 151) 9.9 hours; cancer (glioblastoma); ALZET brain infusion kit 2 used; brain tissue distribution; post op. care (buprenophine).

Agents: Liposomes, cationic Vehicle: Route: Ear (cochlea); Species: Guinea pig; Pump: Duration: ALZET Comments: Gene therapy; tissue perfusion (cochlea).

Agents: Liposomes, cationic; Gene, beta-galactosidase Vehicle: Dextrose solution;; Route: ear;; Species: Guinea pig;; Pump: 1007D;; Duration: ALZET Comments: tissue perfusion (cochlea); comparison of micro injections vs. mp; stress/adverse reaction: significant fibrosis and acute immune response localized at the site of cochleostomy; gene therapy; prophylactic antibiotics provided; PE50 tubing was connected to PE10;.

Agents: Oestrone, oleoyl-; Liposomes Vehicle: Route: IV (jugular); Species: Rat; Pump: 2ML2; Duration: 3, 6, 10, 14 days;
ALZET Comments: controls received mp w/ liposomes; functionality of mp verified by radioimmunoanalysis of 3H-oestrone; Merlin-2 is code name for oestrone, oleoyl in liposomes.

Agents: Estrone, oleoyl-; Liposomes Vehicle: Route: IV (jugular); Species: Rat; Pump: 2ML2; Duration: 28 days;
ALZET Comments: controls received mp w/ liposome suspension; pumps replaced after 14 days; oleoyl-estrone in liposomes was named Merlin-2.

Agents: Estrone, oleoyl-; Liposomes Vehicle: Route: IV (left jugular); Species: Rat; Pump: 2ML2; Duration: 28 days;
ALZET Comments: controls received mp w/ liposomes; pumps replaced after 2 weeks; stress/adverse reaction: transient weight loss after surgical implantation of mp (pg. 790); oleoyl-estrone in liposomes referred to as "merlin-2".

Agents: Liposomes; Gene, herpes simplex virus thymidine kinase; Gene, lacZ Vehicle: Route: CSF/CNS (caudate nucleus); Species: Rat; Pump: 1003D; Duration: 3 days; 
ALZET Comments: controls received mp w/LacZ gene; tissue perfusion (tumor); functionality of mp verified by gene expression; comparison of intracerebral injections vs. mp; no stress (see pg.473); stability verified by gene expression; ALZET brain infusion kit used; cancer; gene therapy; "DNA-liposome complexes were stable within minipumps at body temperature (37C) for 1-3 days." (pg.474); "continuous administration of DNA-liposome complexes did not result in significant in vivo toxicity." (pg.474).

Agents: Estrone, oleoyl-; Liposomes Vehicle: Route: IV (jugular); Species: Rat; Pump: 2ML2; Duration: 14 days; 
ALZET Comments: no comment posted.

Agents: Liposomes Vehicle: Route: Eye (lens); Species: rabbit; Pump: 2ML1; Duration: no duration posted; 
ALZET Comments: pulsed delivery described; detailed surgical methods.

Agents: Lovastatin; Pravastatin; Liposomes; Simvastatin Vehicle: Route: Propylene glycol; Species: Rat; Pump: 2ML4; Duration: no duration posted; 
ALZET Comments: comparison of injections and oral administration vs. mp; stress/adverse reaction: local cystic reaction to simvastatin and lovastatin (p. 271, 275); enzyme inhibitor (HMG-CoA reductase), sc injections of simvastatin also caused subcutaneous toxicity.

Agents: Phosphatidylycholine; vitamin E; Liposomes Vehicle: Route: CSF/CNS (cortex); Species: Rat; Pump: 2001; Duration: 7 days; 
ALZET Comments: Multiple pumps per animal (2); agent also called D-alpha-tocopherol.

Agents: 8-MOP; Chromophore; Sorbinil; Liposomes Vehicle: Radio-isotopes; Route: Eye (lens); Species: rabbit; Pump: 2ML1; Duration: 7 days; 
ALZET Comments: tissue perfusion (ocular lens); liposome-encapsulated agents.

Agents: Interferon-gamma; Liposomes Vehicle: Route: SC; Species: Rat; Pump: 2001; Duration: 7 days; 
ALZET Comments: controls received mp w/empty liposomes; liposome encapsulated agent and free agent; comparison of iv injections vs. mp infusion; cancer/immunology; peptides.