

### Acute Kidney Injury

001 AKI: Basic Basic studies on the pathophysiology of AKI in models ranging from cultured cells or subcellular reconstitution experiments to animal or human studies involving renal ischemia, cellular nucleotide depletion, oxidative injury, or hypoxia. Includes studies dealing with the cell and molecular biology, proteomics, and genomics of AKI.

002 AKI: Basic Repair Basic studies focusing on mechanisms of repair from cell injury associated with AKI.

003 AKI: Clinical Clinical studies of AKI including epidemiology, outcomes, and clinical trials including studies of AKI or delayed function following transplantation. Includes clinical tubular disorders not mentioned above, toxic nephropathy, and any disease process resulting in AKI in the clinical setting.

### Bioengineering and Informatics

This category brings together high quality science which applies novel technologies to more traditional renal disciplines such as renal replacement therapy, transplantation, glomerulonephritis, and dialysis vascular access to advance our continuing commitment to improved patient care. This category accepts abstracts that cover the entire gamut of basic and applied bioengineering and informatics, from the molecular to the whole animal level and from ex-vivo modeling to clinical trials.

101 Bioengineering and Informatics All aspects of bioengineering and informatics. Broad topics include: hemodynamics and fluid dynamics; local delivery of drugs, cells, genes, and chemicals; nanotechnology and sensors; bioinformatics; imaging; and advanced and innovative technologies.

### Cell and Matrix Biology

201 Cell Signaling/Oxidative Stress Studies of cell signaling and oxidative stress pathways in glomerular, tubulo-interstitial, and vascular cells. Signals mediated by protein kinases or phosphatases, lipid mediators, and phospholipids including metabolites of arachidonic acid through cyclooxygenases and lipoxygenases. Oxidative stress and redox signaling, generation of reactive oxygen species through mitochondria, NADPH oxidases, antioxidant enzymes, and transcription factors that regulate pro and antioxidant pathways. Signaling pathways regulated by glucose, advanced glycation end products, and free fatty acids. Cell-cell interaction signals, calcium, ion channels, and gap junctions.

202 Extracellular Matrices and Their Receptors Basic studies in kidney cells or isolated tissue such as glomeruli or tubules related to extracellular matrix proteins, their synthesis and degradation, integrins and other matrix protein receptors, matrix cytoskeletal interactions, cell-cell communication and cell permeability, integrin-focal adhesions kinases-actin, cell migration, metalloproteinases and ADAMs, signals activated by matrix proteins, and RGD peptides.

203 Apoptosis, Proliferation, Autophagy, Cell Senescence, Cell Transformation Studies of ligands, receptors, metabolites, complement components, intracellular mediators, ER stress, cell cycle proteins, mitochondrial and nuclear DNA, proteins, lipids, enzymes, related to hypertrophy, contractility, proliferation, autophagy, apoptosis, necrosis, or cell transformation.

204 Growth Factors, Chemokines, Autacoids Regulation of expression, synthesis, release, binding, attachment, and sequestration by extracellular matrix proteins; mechanism of action including endocrine, autocrine, and paracrine effects.

### Chronic Kidney Disease

301 CKD: Complications Patient-based studies of CKD addressing traditional and non-traditional determinants of progression and the evaluation and treatment of co-morbidities such as those related to cardiovascular disease, growth, and quality of life. Includes studies of inflammation as co-morbidity for progression of CKD.

302 CKD: Estimating Equations, Incidence, Prevalence, Special Populations Studies of the epidemiology of CKD in children and adults and the application and reliability of glomerular filtration rate estimating equations, with particular reference to population-specific results.

303: CKD: Epidemiology, Outcomes Studies on outcomes, including morbidity and mortality, related to CKD or progression of kidney disease in population-based, observational studies, or clinical trials. Includes interim reports from clinical trials in progress or other studies.

304: CKD: Health Services, Prevention Studies on health services and preventive services that involve CKD and their outcomes including quality of life, resource utilization, cost, and survival.

305: CKD: Health Disparities Studies that support advancing scientific knowledge and innovation in areas of prevention, screening, diagnostic, and treatment of people with CKD. The research focus should be aimed at reducing health disparities among groups such as racial and ethnic minorities; residents of rural areas; women, children; older adults; and persons with disabilities.

### Developmental Biology and Inherited Kidney Diseases

401 Developmental Biology Experimental studies related to all aspects of embryology, fetal development, organogenesis, or related ontogeny.

402 Stem Cells and Regeneration Studies related to the identification and manipulation of renal progenitors or stem cells, cell differentiation, or cell fate.

403 Pediatric Nephrology Clinical, epidemiological, and management studies of pediatric diseases.

### Diabetes

501 Diabetes Mellitus and Obesity: Basic – Experimental Studies using cell or animal models including studies of molecular and cell biology, biochemistry or pathology of glucose, hormonal, and metabolic actions, or other basic mechanisms that cause diabetes or diabetic complications or obesity and its complications. Includes in vivo human studies that characterize systems biologic (e.g., genetic, transcriptomic, epigenetic, metabolomic) alterations, or other pathophysiological processes that mediate diabetes, obesity, and their complications.

502 Diabetes Mellitus and Obesity: Clinical Clinical studies of diabetes mellitus or obesity and their complications including nephropathy and associated syndromes including metabolic syndrome. Includes studies of epidemiology, natural history, pathology, biomarkers, pharmacology, clinical trials, and special issues related to end-stage renal disease in persons with diabetes or obesity.

### Dialysis

601 Standard Hemodialysis for ESRD Studies of dialysis adequacy and dose and their measurements including modeling of urea, middle molecules, and other parameters. Studies of membranes, flux, solute transport, dialysis solutions, reuse, and anticoagulation.

602 Dialysis for AKI: Hemodialysis, CRRT, SLED, Others All aspects of therapy for AKI including novel approaches, novel technologies, and comparative and outcome studies.

603 Hemodialysis: Vascular Access Epidemiology, biology, surveillance, maintenance, and repair of dialysis vascular access including clinical and outcome studies.

604 Home and Frequent Dialysis All aspects of home dialysis and frequent dialysis including novel technologies, clinical studies, quality of life, outcome, and financial aspects.

605 Dialysis: Anemia and Iron Metabolism Studies of anemia and iron metabolism in dialysis patients including etiology, pathophysiology, treatment, and outcomes.

606 Dialysis: Epidemiology, Outcomes, and Clinical Trials: Cardiovascular Studies on cardiovascular outcomes including morbidity and mortality related to chronic dialysis (either hemodialysis or peritoneal dialysis); clinical trials; population-based, observational studies and health services research. Includes comparative research between dialysis modalities, transplant, or other medical treatments. Includes interim reports from clinical trials in progress or other studies.

607 Dialysis: Epidemiology, Outcomes, and Clinical Trials: Non-Cardiovascular Studies on non-cardiovascular outcomes including morbidity and mortality related to chronic dialysis (either hemodialysis or peritoneal dialysis); clinical trials, population-based, observational studies and health services research, including comparative research between dialysis modalities or other treatments. Includes comparisons between dialysis modalities, transplant or other medical treatments. Includes interim reports from clinical trials in progress or other studies.

608 Peritoneal Dialysis Clinical trials, population-based, observational studies, and health services research on PD methods, techniques, catheter placement, infectious and non-infectious complications, membrane function (biology and clinical), solute transport, and dialysis adequacy.

609 Dialysis: Palliative and End-of-Life Care Studies on palliative and end-of-life care including physical and psychosocial symptom management, patient-provider communication, prognostication, withdrawal of dialysis, and conservative therapy.

### Ethics in Transplant, CKD, and Dialysis

701 Ethics in Transplant, CKD, and Dialysis Studies on ethical issues in organ procurement, living donors, informed decision making, management of CKD, and dialysis patients such as caring for non-adherent patients, disruptive dialysis patients, end-of-life discussions and decision making, and dialyzing undocumented immigrants or geriatric patients with multiple comorbidities and frailty.

### Fluid, Electrolytes, and Acid-Base

Abstracts should focus on aspects of epithelial cell biology, cellular and molecular physiology, and integrative physiology relevant to normal and abnormal fluid, electrolyte, and acid-base homeostasis. Includes clinical studies of disorders of fluid, electrolyte, and acid-base balance.

801 Acid-Base: Basic Studies of normal or abnormal transport of H<sup>+</sup>, ammonia/ammonium, bicarbonate, and other forms of acid-base equivalents. Regulation and expression of acid-base transporters such as Na<sup>+</sup>-H<sup>+</sup> exchangers, Cl<sup>-</sup>-HCO<sub>3</sub><sup>-</sup> exchangers, Na<sup>+</sup>-HCO<sub>3</sub><sup>-</sup> cotransporters, H<sup>+</sup>-ATPases.

802 Water/Urea/Vasopressin, and Organic Solutes Studies of normal or abnormal transport of water and urea. Regulation and expression of vasopressin receptors, water channels, and urea transporters. Studies of urine concentration and its regulation. Cell volume regulation and osmotic regulation of gene expression. Studies of normal or abnormal transport of organic solutes. Renal cell energy metabolism, amino acid metabolism, and ammoniogenesis.

803 Na<sup>+</sup>, K<sup>+</sup>, and Cl<sup>-</sup> Basic Studies of normal or abnormal transport of Na<sup>+</sup>, K<sup>+</sup>, and Cl<sup>-</sup>. Regulation and expression of channels and transporters mediating transport of Na<sup>+</sup>, K<sup>+</sup>, and Cl<sup>-</sup>. Includes studies of protein sorting and epithelial biology.

804 Fluid, Electrolyte, and Acid-Base Disorders Clinical studies of disorders of fluid, electrolyte, and acid-base balance including hypovolemia, edematous disorders, hyponatremia, hypernatremia, hypokalemia, hyperkalemia, metabolic or respiratory acidosis, metabolic or respiratory alkalosis, and methods and goals of fluid resuscitation. Includes Mendelian diseases of electrolyte and acid-base balance.

### Genetic Diseases of the Kidney

901 Cystic Kidney Diseases Studies on all aspects of inherited cystic kidney disease including autosomal recessive and autosomal dominant polycystic kidney disease (ADPKD and ARPKD), nephronophthisis, medullary cystic kidney disease, and other cystic conditions. Includes clinical, genetic, cell biological, biochemical, and pathophysiological analysis of this group of disorders, employing human populations, animal models, and cellular or in vitro systems.

902 Non-Cystic Mendelian Diseases Studies on all aspects of non-cystic monogenic diseases and syndromes with renal or urogenital phenotypes. Includes clinical, genetic, cell biological, biochemical, and pathophysiological analysis of this group of disorders, employing human populations, animal models, and cellular or in vitro systems.

903 Genetic Epidemiology and Other Genetic Studies of Common Kidney Diseases Genetic studies of all aspects of complex traits, including nephrosclerosis/diabetic nephropathy/CKD, to identify and characterize genetic risk factors associated with these common disorders employing human populations and animal models.

### Geriatric Nephrology

1001 Geriatric Nephrology Basic, clinical, and health services research relevant to the field of geriatric nephrology. Specific focus areas are age-related changes in kidney structure and function; epidemiology and outcomes of CKD in older adults; kidney transplant in older adults; management of older adults receiving chronic dialysis; AKI in the elderly; management of older adults with CKD; and advance care planning and end-of-life care in older adults with CKD.

### Hypertension

Abstracts may be studies in humans, animal models, or in vitro experiments. Studies in specific disorders such as diabetic renal disease or nephrotic syndrome are suitable only if the chief focus is the regulation or pathophysiology of blood pressure or blood flow.

1101 Hypertension: Basic Studies on the mechanisms and pathophysiology of hypertension including circulating factors, neural control, and smooth muscle physiology. Includes in vivo (animal), isolated organ, cellular, and subcellular experiments.

1102 Hypertension: Clinical Studies on the diagnosis, management, and outcome of hypertension and pharmacology of antihypertensive agents. Includes renovascular, essential, and endocrine hypertension as well as hypertensive disorders of pregnancy.

### Mineral Disease

Abstracts may be studies in humans, animal models, or in vitro experiments. Studies of calcium as an intracellular signal may be better suited to Categories 203 (for renal cell biology) or 901 (for smooth muscle biology).

1201 Mineral Disease: Ca/Mg/PO<sub>4</sub> In vivo and in vitro studies of the transport and regulation of calcium, magnesium, and phosphorus. Includes Na-Pi cotransport, sulfate, and related anion transport, oxalate homeostasis, and regulation of whole body Ca, Mg, and P flux/stores/receptors. Includes diseases with abnormalities of Ca, Mg, and P.

1202 Mineral Disease: Vitamin D, PTH, FGF-23 In vivo and in vitro studies of PTH, 25(OH)D, 1,25(OH)<sub>2</sub>D, FGF-23 and related hormones and their receptors, regulation of gene expression, physiologic and pharmacologic actions, and metabolism. Studies of normal and disordered function and growth of parathyroid glands and abnormalities of vitamin D homeostasis. Includes diseases with abnormalities of PTH, Vitamin D, and FGF-23.

### Mineral Disease (cont.)

1203 Mineral Disease: CKD-Bone Basic and clinical studies on the diagnosis, therapy, complications, and outcomes of and bone disease in CKD. Studies on the pathophysiology and etiology of bone disease using in vivo and in vitro animal and human studies. Includes treatment for the control and prevention of bone disease in CKD, dialysis, or transplant settings.

1204 Mineral Disease: Nephrolithiasis Studies on the metabolic, dietary, environmental, and genetic risk factors for nephrolithiasis. Chemistry of crystallization in urine, endogenous inhibitors of stone formation, and interactions between crystals and urothelium. Management of stones and therapies to reduce risk of recurrence. Includes clinical, animal, and in vitro studies.

### Nephrology Education

Abstracts should be focused on research concerning education of physicians and/or patient education with a focus on kidney disease.

1301 Educational Research Methods to translate research into practical improvements in nephrology education, methods to evaluate the effectiveness of education in nephrology and novel educational tools in nephrology and related disciplines. Includes studies on assessing educational deficits, developing educational tools or programs, implementing educational programs, assessing obstacles to the success of education, and assessing outcomes and changes in practice following education. Also includes studies pertaining to the education of either patients or physicians (postgraduate education, fellowship training, and continuing education for physicians).

1302 Fellows Case Reports Clinical cases or pedigrees that demonstrate novel clinical findings, illustrate classic conditions in new or unusual ways, or illuminate and expand knowledge concerning physiology, cell biology, genetics, or molecular mechanisms. These case reports should reflect an understanding of the relevant science and are eligible for poster presentation and publication only.

### Nutrition, Inflammation, and Metabolism

1401 Nutrition, Inflammation, and Metabolism Basic and patient-based studies addressing the metabolic and physiologic responses to nutrients (amino acids, fatty acids, carbohydrates, minerals, vitamins) and how they interface with kidney disease and its treatment along with the etiology and nutritional and metabolic consequences of local or systemic inflammation. Nutrition and energy expenditure, obesity, body composition, adipokines; hormones; uric acid, metabolic syndrome; nutrition status, malnutrition, diet therapies, nutrient gene interaction; inflammation, anti-inflammatory therapies.

### Glomerular and Tubulointerstitial Disorders

Abstracts include basic/experimental/clinical work dealing with the biology of disease pathogenesis including basic biological mechanisms, cell, and whole animal studies. These categories include studies of autoimmunity, antibodies and antibody-mediated injury, cell-mediated mechanisms and immune cell-mediated injury, cytokines that regulate the immune system, and primary studies of the immune system as it relates to the kidney. These categories also include the pathophysiology of the extracellular matrix and experimental and clinical pathology.

1501 Basic/Experimental Immunology Basic/experimental works in immunology where immune mechanisms and immune-mediated renal disease are the primary focus. Includes in vivo models of autoimmunity as well as basic and applied studies of immunoregulation, antibodies, antibody-mediated injury, cell mediated immunity, cytokines, and chemokines in the immune system and primary studies of the immune system as it relates to the kidney.

1502 Basic/Experimental Inflammation Basic/experimental work dealing with inflammatory systems as they relate to glomerular and interstitial diseases including oxidants, enzymes, coagulation, growth factors, complement, angiostatic and angiogenic factors, and cytokines that up- and down-regulate inflammatory events.

1503 Basic/Experimental Pathology Basic/experimental work focusing on aspects of cell, organ, and whole animal pathology where the focus is factors that regulate differentiation, cell injury, apoptosis, and other areas relevant to pathology.

1504 Extracellular Matrix Biology, Fibrosis, Cell Adhesion Experimental studies related to the role of the extracellular matrix and its receptors in kidney diseases. Studies on the expression of components of the extracellular matrix and on assembly of higher order structures. In vivo and in vitro studies on the effect of extracellular matrix and matrix receptors on cell structure and function including signal transduction pathways activated by integrins and other matrix receptors. Studies on renal fibrosis.

1505 Cell Biology: Glomerular Basic studies of mesangial, epithelial, and endothelial cells of the glomerulus. Includes in vivo and in vitro studies of proteins that regulate the structural maintenance and sustained function of the glomerular filter.

1506 Clinical/Diagnostic Renal Pathology and Lab Medicine Studies dealing with diagnostic and prognostic anatomic renal pathology or with laboratory medicine procedures used to evaluate renal diseases. Includes transplant pathology (Categories 1801-1802). Abstracts dealing with a specific disease or pathologic process may be submitted in this category or in Categories 301, 901, 903, 1102, 1503, 1504, or 1505.

1507 Clinical Glomerular and Tubulointerstitial Disorders Studies relating to epidemiology, diagnosis, and/or treatment of glomerular diseases (e.g., lupus nephritis, nephrotic syndrome, HIV/AIDS nephropathy, and hemolytic uremic syndrome/thrombotic thrombocytopenia) and tubulointerstitial diseases (e.g., allergic interstitial nephritis). See Category 1504 for matrix/cell-matrix interactions and fibrosis.

### Patient Safety

1601 Patient Safety Studies on practices or interventions to improve patient safety including clinical decision aids and systems to reduce the risk of adverse events in various care settings. Safety problems may encompass, but are not limited to, inappropriate medication prescribing or dosing for patients with advanced CKD, inadequate monitoring, failure to identify CKD, and inappropriate diagnostic tests.

### Pharmacokinetics, Pharmacodynamics, and Pharmacogenetics

1701 Pharmacokinetics (PK)/Pharmacodynamics (PD)/Pharmacogenomics Basic/experimental or clinical/translational studies assessing drug absorption, distribution, elimination (including specific pathways of metabolism, transport, and organ excretion and genetic differences for these), and/or drug response. Studies characterizing effects of kidney disease and/or renal replacement therapy or other extracorporeal treatments on PK or PD. Genome-wide association studies to assess the inherited basis of inter-individual differences in drug response are also included in this category.

### Transplantation

Abstracts may deal broadly or specifically with all aspects of renal transplantation including items dealing with related ethical issues.

1801 Transplantation: Basic and Experimental Basic and experimental work using animal models (in vitro or in vivo) that focus on the following: (a) basic mechanisms of lymphocyte biology relevant to transplantation including T cell activation, costimulation, and memory cell development; (b) basic mechanisms of allograft or xenograft rejection, mechanisms of rejection of cell transplants including allorecognition, cell trafficking, humoral and cellular effector functions, and genetic analysis of rejecting organ; (c) novel immunotherapeutic agents; (d) stem cell biology relevant to transplantation; (e) experimental animal models of organ preservation; (f) models that focus on devising and evaluating approaches to induce, measure, and maintain immune tolerance to transplanted allogeneic or xenogeneic organs or tissues; and (g) models that focus on deciphering mechanisms of T and B cell tolerance to transplanted organs or tissues including deletion, regulation, and anergy.

1802 Transplantation: Clinical and Translational Human studies focusing on all aspects of clinical management of kidney transplant recipients including: (a) final or interim reports of clinical trials with immunosuppression or other treatment protocols including clinical trials of tolerance regimens; (b) pharmacology of immunosuppression; (c) studies of delivery of care and organ allocation; (d) studies of graft function and survival outcomes, morbidity, mortality, quality of life issues, and cost of transplantation; (e) studies on outcomes, including morbidity and mortality, related to transplantation in population based or observational studies; (f) effects of risk factors including donor factors and organ donation issues; and (g) studies on the causes, diagnosis, and management of post-transplant complications including acute and chronic rejection, delayed graft function, and chronic allograft dysfunction, infections, and extrarenal complications of renal transplantation. Includes studies dealing with translational research or in vitro studies including: (a) biomarker discovery and validation; and (b) immunomonitoring of kidney transplant recipients.

### Vascular Biology

Abstracts may be studies in humans, animal models, or in vitro experiments. Studies in specific disorders such as diabetic renal disease or nephrotic syndrome are suitable only if the chief focus is related to vascular and endothelial biology.

1901: Vascular Biology: Atherosclerosis, Inflammation, Endothelium Studies of mechanisms involved in the structural or functional homeostasis of the circulatory system using animal or human materials.

1902: Vascular Calcification Studies of the mechanisms, diagnostics, epidemiology, and clinical trials relating to vascular calcification.

1903: Vascular Biology: Blood and Lymphatic Development, Function, and Homeostasis Studies of the blood or lymphatic endothelium as they relate to kidney disease, function, or blood pressure regulation.