

NOV¹² 8 2012

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- 1. Species (Common Name):** Monkey
- 2. Number of animals:** 50
- 3. Exception:** Sanitation
- 4. Description:** Specialized housing is provided for nonhuman primates imported directly from foreign sources. As recommended by the Centers for Disease Control (CDC), cages used in this building cannot be sent through the mechanical cage washer until the animals have completed 31 days (Phase 1) of quarantine and have been cleared for release from quarantine by the CDC. Animal waste is removed from cage pans daily. After monkeys have completed Phase I quarantine, cages are sanitized at intervals in accordance with federal regulations and standards.
- 5. Purpose and value of study:** Wake Forest is equipped with a facility that will allow direct importation of nonhuman primates (NHP) from non-domestic sources. This quarantine process produces disease free animals that pose no public risk. This option allows us to meet the demand and criteria of animals needed for many studies.

- 1. Species (Common Name):** Monkey
- 2. Number of animals:** 15
- 3. Exception:** Watering
- 4. Description:** Access to fluids is timed so that monkeys are thirsty during operant testing in which sips of fluid serve as the reward. Trained animals generally work to satiety and obtain more than the minimum daily fluid requirement. If adequate fluid intake is not reached during testing, however, the subjects are supplemented to at least minimum levels afterward. Health and hydration are assessed every day by both research and veterinary personnel. Water regulation is suspended if subjects exhibit signs of dehydration (i.e., decreased urine production, dry feces, anorexia, changes in skin elasticity, and changes in hematocrit) or a reduction of body weight.
- 3. Exception:** Multiple Major Survival Surgery
- 4. Description:** The two major surgeries are for placement of craniotomy access cylinders to record and compare electrical brain activity from the different sites. The results of electrophysiological studies after the first surgery indicate the additional brain area that must be recorded for complete neural circuit analysis. Interval between the surgeries is typically >1 year.
- 5. Purpose and value of study:** Although humans can undergo brief periods with little to no sleep, the problems of extended sleep deprivation are vitally important especially for military personnel, shift-workers, medical personnel, mothers with very young children, and long-distance truck drivers, all of whom must continue to do their essential duties with prolonged periods of sleep loss or interruption. Despite such sleep deprivation, societal and job demands require these individuals to be attentive, remember accurately, and make appropriate decisions. The experiment provides access to information (i.e., electrophysiological measures and testing of palliative drugs) that cannot be obtained in human studies.

- 1. Species (Common Name):** Cat
- 2. Number of Animals:** 19
- 3. Exception:** Lighting
- 4. Description:** Lighting: All animals are raised from birth to adulthood in total darkness.
- 5. Purpose and value of study:** These studies examine the role of visual experience on the development of the multisensory processes by which the brain synthesizes information from different senses, like vision and hearing, to shape the way we perceive the world. By manipulating visual input during development we learn how the nervous system compensates. This work will be translated into clinical treatments, like prosthetic devices, to improve the lives of those with congenital or early-acquired sensory deficits.

- 1. Species (Common name):** Monkey
- 2. Number of animals:** 37
- 3. Exception:** Singly Housed Primates
- 4. Description:** Each housing unit is equipped with an operant panel from which animals self-administer food and cocaine. Cocaine is provided via a tether that encloses a chronic, indwelling, intravenous catheter. Animals are singly-housed to continuously measure their intake and to deliver potential treatment drugs over extended periods of time which provides enhanced translational value.
- 5. Purpose and value of study:** There are currently no FDA-approved medications for the treatment of cocaine addiction. These studies systematically investigate current off-label medications or new medications for cocaine addiction. These studies should provide important information relevant to clinicians.

- 1. Species (Common Name):** Monkey
- 2. Number of animals:** 24
- 3. Exception:** Singly Housed Primates
- 4. Description:** There are published data suggesting that social stress affects dopaminergic systems in the brain as well as the reinforcing effects of drugs, like cocaine. These studies assess physiological and behavior measurements related to dopamine D₃ receptors, and social housing can reasonably be expected to confound our findings.
- 5. Purpose and value of study:** Dopamine is a chemical in the brain that has been shown to affect drug addiction. These studies examine D₃ compounds that activate the dopamine D₃ receptor which has been identified as an important target for new medications for addiction.

- 1. Species (Common Name):** Monkey
- 2. Number of animals:** 24
- 3. Exception:** Singly Housed Primates
- 4. Description:** There are published data from this laboratory showing that social stress affects dopaminergic systems in the brain as well as the reinforcing

effects of drugs, like cocaine. The present studies assess physiological and behavior measurements related to the dopamine system using positron emission tomography (PET) imaging, cerebrospinal fluid (CSF) collection, and behavioral pharmacology techniques in monkeys that have been prenatally exposed to cocaine or control animals. If these monkeys were social housed, it would confound our findings.

5. Purpose and value of study: The long-term neurological and behavioral consequences of this early drug exposure and whether this early experience makes young adults more vulnerable to cocaine abuse are unknown. These studies are aimed at understanding the neurobiological and behavioral consequences of prenatal cocaine exposure in adult rhesus monkeys.

- 1. Species (Common Name):** Monkey
- 2. Number of animals:** 8
- 3. Exception:** Singly Housed Primates
- 4. Description:** There are published data suggesting that social stress affects dopaminergic systems in the brain as well as the reinforcing effects of drugs, like cocaine. These studies assess physiological and behavior measurements related to cocaine self-administration receptors, and social housing can reasonably be expected to confound our findings.
- 5. Purpose and value of study:** The objective is to understand better how the brain changes in response to cocaine, and how these changes relate to changes in performance on tasks assessing learning and memory (cognition). These studies are important to address the progressive nature of brain, cognitive, and behavioral changes associated with cocaine use that cannot be characterized in human studies.

- 1. Species (Common Name):** Monkey
- 2. Number of animals:** 27
- 3. Exception:** Singly Housed Primates
- 4. Description:** There are published data from this laboratory showing that social stress affects dopaminergic systems in the brain as well as the reinforcing effects of drugs, like cocaine. Aims 1 and 3 in the present studies assess physiological and behavioral measurements related to the dopamine system using positron emission tomography (PET) imaging, Cerebrospinal fluid (CSF) collection, and the acquisition of cocaine self-administration in female monkeys. Monkeys are individually housed upon arrival to the laboratory while we collect these measures. The animals are then socially housed and the measures are redetermined and studied as a function of social rank.
- 5. Purpose and value of study:** We can examine sex differences, comparing the effects we previously published in male monkeys, to those found in this study using female monkeys. Human clinical data suggests that women become addicted sooner than men and experience a harder time remaining abstinent. These studies should provide important information with regards to sex differences in measures associated with vulnerability and abuse of drugs.

1. **Species (Common name):** Monkey
2. **Number of animals:** 9
3. **Exception:** Singly Housed Primates
4. **Description:** Each housing unit is equipped with an operant panel from which animals self-administer food and ethanol. Animals are singly-housed to continuously measure their alcohol.
5. **Purpose and value of study:** Little is known about factors that render some individuals more susceptible to becoming alcoholics than others. There is a growing appreciation of an individual's reaction to positive and negative experiences on sensitivity to abused drugs. Data obtained from these studies will provide information regarding vulnerability to the effects of alcohol, and will suggest new approaches for treating abuse.

1. **Species (common Name):** Monkey
2. **Number of animals:** 10
3. **Exceptions:** Singly Housed Primates
4. **Descriptions:** In order to measure fractional cholesterol absorption and fecal neutral sterol excretion, animals will be individually housed for a period of 3 days on four different occasions to collect feces from each animal. With the exception of these times, animals will be socially housed.
5. **Purpose and Value of study:** This project investigates the role of the LXR receptor in the development of atherosclerosis. LXR agonists increase high density lipoprotein-C (HDL-C) and decrease atherosclerosis in mice; however, LXR agonist treatment of hepatocytes from humans degrades the low density lipoprotein (LDL) receptor and potentially increases atherosclerosis. To evaluate whether the monkey is an effective model for humans, we hypothesize that LXR agonist treatment of monkeys will cause an increase in LDL due to the induction of Idol in the liver as in human hepatocytes.

1. **Species (common Name):** Monkey
2. **Number of animals:** 9
3. **Exceptions:** Singly Housed Primates
4. **Descriptions:** In order to measure fractional cholesterol absorption and fecal neutral sterol excretion, it is necessary to house monkeys singly.
5. **Purpose and Value of study:** The goal of this study is examine the potential of a proprietary compound for preventing atherosclerosis by determining if it will increase HDL cholesterol concentrations and increase reverse cholesterol transport in monkeys.

1. **Species (Common name):** Monkey
2. **Number of animals:** 14
3. **Exception:** Singly Housed Primates
4. **Description** Infected adults (used as controls) are housed singly to reduce spread of influenza virus infection. Companion animals are housed in an adjacent cage.

5. Purpose and value of study Clinical findings suggest the immune system of the human newborn is poorly equipped to mount an efficacious immune response. For obvious reasons, mechanistic experiments investigating the immune response to virus infection in human newborns cannot be performed. However, identification of defects in the immune response in neonates is of critical importance for both development of targeted immunotherapeutics and the design of vaccines that can be used successfully in these individuals. Although the very young mouse shows deficits in the immune system, the establishment of a monkey model could better mirror the immune response of human infants and provide the means to identify better treatments.

- 1. Species (Common Name):** Sheep
- 2. Number of animals:** 32
- 3. Exception:** Cage Size
- 4. Description:** For each protocol listed, sheep (*Ovis aries*) are used in studies of endocrine, renal and/or cardiovascular regulation, and are housed in metabolism carts below minimum square footage for up to twenty one days. Data show movement of animals in and out of the carts on a daily basis would adversely influence the hormones measured in these experiments.
- 3. Exception:** Multiple Major Survival Surgery
- 4. Description:** Project 1 - 1st surgery – placement of bladder catheter. 2nd surgery – Left nephrectomy and placement of renal artery catheter. Project 2 – 1st surgery – Placement of bladder catheter at 6 months of age. 2nd surgery – placement of bladder catheter at 12 months of age. Project 3 (newborn) renal nerve electrodes at 2 weeks of age. 2nd surgery (newborn) – placement of fourth ventricular catheter at 2 weeks of age. Project 3 (adult) – 1st surgery – Placement of renal nerve electrodes at 6 month 2nd surgery – Placement of fourth ventricular catheter at 6 months of age. 3rd surgery – placement of renal nerve electrodes at 12 months. 4th surgery – placement of fourth ventricular catheter at 12 months of age.
- 5. Purpose and value of study:** These studies will advance our understanding of factors relating to the health and survival of newborn infants.

- 1. Species (Common Name):** Monkey
- 2. Number of animals:** 3
- 3. Exception:** Fluid regulation
- 4. Description:** The fluid scheduling practices are based on the institutional fluid regulation policy as set forth by the animal care and use committee. Access to fluids is scheduled such that animals' first fluid intake of the day occurs during a training or experimental session. Trained animals generally work to satiety and obtain more than the minimum daily fluid requirement based on a baseline (pre-study) weight. If adequate fluid intake is not reached during testing, the subjects are supplemented to a minimum physiological standard (based on weight). Animal status is assessed by research personnel daily. Study animals are weighed with every experimental session (typically 5 x / week) and fluid regulation is suspended if weight loss exceeds a baseline criterion and/or the animal displays any sign of dehydration (e.g., decreased urine production, changes in skin elasticity).

- 3. Exception:** Multiple Major Survival Surgery
- 4. Description:** Up to two major surgeries are possible for a subset of animals. Both entail the implantation of a recording cylinder that allows for assessing the activity of single neurons within the motor thalamus and an associated structure.
- 5. Purpose and value of study:** The purpose of this study is to understand the neural mechanisms of visuomotor control, specifically, how subcortical and cortical systems interact to generate purposeful behavior in response to sensory stimuli. The results are relevant to understanding the basis of numerous sensorimotor disturbances, including sensory neglect and Parkinson's disease.

- 1. Species (Common Name):** Monkey
- 2. Number of animals:** 5
- 3. Exception:** Fluid regulation
- 4. Description:** The fluid scheduling practices are based on the institutional fluid regulation policy as set forth by the animal care and use committee. Access to fluids is scheduled such that animals' first fluid intake of the day occurs during a training or experimental session. Trained animals generally work to satiety and obtain more than the minimum daily fluid requirement based on a baseline (pre-study) weight. If adequate fluid intake is not reached during testing, the subjects are supplemented to a minimum physiological standard (based on weight). Animal status is assessed by research personnel daily. Study animals are weighed with every experimental session (typically 5 x / week) and fluid regulation is suspended if weight loss exceeds a baseline criterion and/or the animal displays any sign of dehydration (e.g., decreased urine production, changes in skin elasticity).
- 3. Exception:** Multiple Major Survival Surgery
- 4. Description:** Up to two major surgeries are possible for a subset of animals. Both entail the implantation of a recording cylinder that allows for assessing the activity of single neurons within the Frontal Eye Fields of each hemisphere.
- 5. Purpose and value of study:** The goal of our research is to understand how the brain converts information about objects or events in the environment (e.g., the phone rings) into the brain activity that produce actions (e.g., pick up the phone). To do so, we study vision (sensory) and eye movements (action) in monkeys trained to perform a variety of behavioral tasks. To understand how the brain's activity relates to the visual stimuli and to the eye movements needed to look at these stimuli, brain activity is measured while an animal is performing a behavioral task. One can appreciate this by considering the complexity of the behavioral impairments associated with disorders like Parkinson's disease, Huntington's chorea (a movement disorder not unlike Parkinson's Disease), or parietal neglect (the failure to sense or tendency to ignore certain parts of the visual world).

- 1. Species (Common Name):** Monkey
- 2. Number of animals:** 4
- 3. Exception:** Fluid regulation
- 4. Description:** The fluid scheduling practices are based on the institutional fluid regulation policy as set forth by the animal care and use committee. Access to fluids is scheduled such that animals' first fluid intake of the day occurs during a training

or experimental session. Trained animals generally work to satiety and obtain more than the minimum daily fluid requirement. If adequate fluid intake is not reached during testing, however, the subjects are supplemented to at least minimum levels afterward. Animal health is assessed every day by both research and veterinary personnel. Water regulation is suspended if subjects exhibit signs of dehydration (e.g., decreased urine production, changes in skin elasticity) or a significant reduction of body weight.

- 3. Exception:** Multiple Major Survival Surgeries
4. Description: Major Surgery 1: Implantation of recording cylinder to record the activity of neurons in the cochlear nucleus. Major Surgery 2: Implantation of recording cylinder to perform neuronal recordings in the inferior colliculus.
5. Purpose and value of study: The purpose of this study is to understand the neuronal mechanisms utilized in the normal auditory system that allow us to hear sounds in complex (noisy) environments. The results will help create biologically realistic signal processing strategies for hearing aids and cochlear implants, which often fail in noisy environments.

- 1. Species (Common Name):** Monkey
2. Number of animals: up to 6
3. Exception: Watering
4. Description: The animals' water intake is scheduled so that the first fluid intake of the day occurs during the training or experimental session. Trained animals generally work to satiety and obtain more than the minimum daily fluid requirement. If adequate fluid intake is not reached during testing, however, the subjects are supplemented to at least minimum levels afterward. Animal health is assessed every day by both research and veterinary personnel. Water regulation is suspended if subjects exhibit signs of dehydration (e.g., decreased urine production, changes in skin elasticity) or a significant reduction of body weight.
3. Exception: Multiple Major Survival Surgeries
4. Description: Multiple survival surgeries to implant recording cylinders may be required in this study if the first implant fails or if recording from a second brain region is needed. No more than 3 major surgeries will be conducted per animal.
5. Purpose and value of study: The experiments will help uncover how learning changes the brain. Cognitive training has emerged in the past few years as a means of restoring function lost after traumatic brain injury and to ameliorate the effects of genetic disorders such as Alzheimer's disease and schizophrenia. Our results will shed light on the underlying neural circuit changes that occur following cognitive training, and they are expected to offer insights for the design of better treatment strategies for these conditions.

- 1. Species (Common Name):** Monkey
2. Number of animals: up to 6
3. Exception: Watering
4. Description: The animals' water intake is scheduled so that the first fluid intake of the day occurs during the training or experimental session. Trained animals generally work to satiety and obtain more than the minimum daily fluid requirement.

If adequate fluid intake is not reached during testing, however, the subjects are supplemented to at least minimum levels afterward. Animal health is assessed every day by both research and veterinary personnel. Water regulation is suspended if subjects exhibit signs of dehydration (e.g., decreased urine production, changes in skin elasticity) or a significant reduction of body weight.

- 3. Exception:** Multiple Major Survival Surgeries
- 4. Description:** Multiple survival surgeries are required in this study for the implantation of recording cylinders to gain access for neurophysiological recordings to more than one brain area and/or both brain hemispheres. No more than 3 major surgeries will be conducted per animal.
- 5. Purpose and value of study:** The results will offer insights into how the brain performs visual perception, and they will contribute to the body of knowledge used to design better treatment strategies for disorders of learning and memory.

- 1. Species (common Name):** Monkey
- 2. Number of animals:** up to 4
- 3. Exceptions:** Multiple Major Survival Surgeries
- Descriptions:** 1st major Surgery: Implantation of recording cylinder over the prefrontal cortex to allow microelectrode recordings. 2nd Major Surgery: Implantation of recording cylinder over the parietal cortex to allow microelectrode recordings. 3rd Major Surgery: Implantation of recording cylinder over the prefrontal or parietal cortex of the other hemisphere.
- 3. Exception:** Watering
- 4. Description:** The animals' water intake is scheduled so that the first fluid intake of the day occurs during the training or experimental session. Trained animals generally work to satiety and obtain more than the minimum daily fluid requirement. If adequate fluid intake is not reached during testing, however, the subjects are supplemented to at least minimum levels afterward. Animal health is assessed every day by both research and veterinary personnel. Water regulation is suspended if subjects exhibit signs of dehydration (e.g., decreased urine production, changes in skin elasticity) or a significant reduction of body weight.
- 5. Purpose and Value of study:** This project investigates the changes of prefrontal cortical physiology and functional connectivity that occur after puberty. A non-human primate model will be used which will allow us to conduct neurophysiological recordings in the prefrontal cortex of sexually immature and adult animals. A better understanding of the maturation of executive brain function will be relevant for a host of developmental conditions, including autism and schizophrenia.

- 1. Species (Common Name):** Monkey
- 2. Number of animals:** 2
- 3. Exception:** Multiple Major Survival Surgeries
- 4. Description:** Up to two major surgeries are possible for a subset of animals. Both entail the implantation of a recording cylinder that allows for assessing the activity of single neurons within either a midbrain or cortical territory.

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- 3. Exception:** Water
- 4. Description:** The fluid scheduling practices are based on the institutional fluid regulation policy as set forth by the animal care and use committee. Access to fluids is scheduled such that animals' first fluid intake of the day occurs during a training or experimental session. Trained animals generally work to satiety and obtain more than the minimum daily fluid requirement based on a baseline (pre-study) weight. If adequate fluid intake is not reached during testing, the subjects are supplemented to a minimum physiological standard (based on weight). Animal status is assessed by both research and veterinary personnel daily. Study animals are weighed with every experimental session (typically 5 x/week) and fluid regulation is suspended if weight loss exceeds a baseline criterion and/or the animal displays any sign of dehydration (e.g., decreased urine production, changes in skin elasticity).
- 5. Purpose and value of study:** The purpose of this study is to determine how the brain combines visual and auditory information from the environment to enhance decision-making and attention in complex environments with implications for understanding a variety of sensorimotor disorders.

- 1. Species (common Name):** Monkey
- 2. Number of animals:** 30
- 3. Exceptions:** Multiple Major Survival Surgeries
- 4. Descriptions:** 1st major Surgery: Liver and intestinal biopsies by laparotomy. 2nd major Surgery: Liver and intestinal biopsies by laparotomy.
- 5. Purpose and Value of study:** This study aims to document the effects of dietary fructose on fat accumulation in liver using a relevant non-human primate model. By uncovering the role fructose plays, we can advise on specific therapies for treating people with excess liver fat or advocate for changes in food production. The value of the study rests on the tight control of dietary intakes, uncomplicated by obesity.

- 1. Species (common Name):** Rabbit
- 2. Number of animals:** 5
- 3. Exception:** Multiple Major Survival Surgeries
- 4. Description:** 2 survival surgeries. 1st Surgery: 2 jejunal biopsies were taken and 1cm long strips of smooth muscle from the anal sphincter were removed. Second surgery occurred 6 weeks later, whereby bioengineered autologous tissue was implanted in internal anal sphincter area.
- 5. Purpose and Value of Study:** Fecal incontinence is estimated to affect 2- 13% of all adults and increases with age. Our previous studies in a rodent model have already shown improved internal anal sphincter function using engineered tissue. This project tests our tissue construct in an additional large animal model, as required by the FDA to demonstrate feasibility.

1. **Species (common Name):** Monkey
2. **Number of animals:** up to 16
3. **Exception:** Multiple Major Survival Surgeries
4. **Description:** 1st Major Surgery: Laparotomy to collect luteal tissue from the ovary at baseline. 2nd Major Surgery: Laparotomy to collect luteal tissue from the ovary post-treatment (following 12 months on diet). 3rd Major Surgery: Collection of oocytes following superovulation (post-treatment). 4th Major Surgery: Second collection of oocytes (post-treatment).
5. **Purpose and value of study:** The specific hypothesis to be tested in this study is that obesity negatively affects luteal function in female primates. Pilot data indicate that gene expression data can be collected successfully from luteal tissue from monkeys. The study represented here will build upon the pilot data to investigate the relationship between obesity, reproductive hormones and luteal function in a larger group of monkeys.

1. **Species (Common Name):** Monkey
2. **Number of animals:** up to 54
3. **Exception:** Multiple Major Survival Surgeries
4. **Description:** 1st Major Surgery: Laparotomy and remove the exterior muscle layer of the sphincter and take a biopsy of quadriceps muscle. 2nd Surgery: Approximately 1 month after confirming the reduction in sphincter function, a second laparotomy is done and the isolated cells injected into the urinary sphincter.
5. **Purpose and value of study:** Cell therapy is proposed for the regeneration of urinary sphincter muscle and reduction of the symptoms of stress urinary incontinence (SUI). However, it is unclear if the injected cells actually become a functional urinary sphincter or are simply a stimulus for native cells to infiltrate the sphincter. The goal of the studies is to label autologous skeletal muscle precursor cells (MPCs) and inject them into the muscle damaged urinary sphincter of female nonhuman primates (NHP). The NHP model was chosen because they have an almost identical (on a smaller scale) urinary tract structure as human beings. They have an upright sitting posture and cyclical hormonal changes similar to a woman.

1. **Species (Common Name):** Dog
2. **Number of animals:** 197
3. **Exception:** Multiple Major Survival Surgeries
4. **Description:** 1st Major Surgery: cesarean section. Puppies delivered. 2nd Major Surgery: cesarean section: The same procedure will be followed as the first cesarean section with extra care given due to scar tissue that may be present from the first cesarean section.
5. **Purpose and value of study:** The purpose of this protocol is to breed carrier female dogs to produce affected male dogs in order to study dogs with myotubular myopathy that will serve as a bridge to develop safe and efficient treatments for genetically inherited diseases in humans.

- 1. Species (Common Name):** Cat
- 2. Number of animals:** 2
- 3. Exception:** Multiple Major Survival Surgeries
- 4. Description:** 1st Major Surgery: (i) Chronic visual cortex ablation procedures; (ii) Instrumentation for recording. 2nd Major Surgery: (i) Implantation of instrumentation for chronic anesthetized physiological preparations; (ii) In select animals, the second surgery is done to place a second lesion in the associational regions of cortex once behavioral testing and rehabilitation is complete. These animals may undergo a third surgery for instrumentation. (iii) In select animals, the second surgery is done to facilitate a neurotoxic dopaminergic deafferentation of associational cortex. 3rd Major Surgery: (i) Implantation of instrumentation for chronic anesthetized physiological preparations: Following behavioral testing and a second cortical lesion, animals are instrumented with a head-holding/recording under isoflurane anesthesia.
- 5. Purpose and value of study:** Damage to regions of the cortex in humans as a consequence of stroke or traumatic brain injury can produce a type of visual deficit called the 'parietal neglect syndrome', where individuals do not notice or make eye movements toward objects in half of their visual world. We intend to induce similar deficits in experimental animals by making large visual cortex lesions in order to gain insights into why this disorder occurs. In addition, we will determine if such lesioned animals can regain some of the visuomotor capabilities that are 'lost' following brain damage using behavioral training techniques.

- 1. Species (Common Name):** Swine
- 2. Number of animals:** up to 110
- 3. Exception:** Multiple Major Survival Surgeries:
- 4. Description:** 1st major Surgery: a craniotomy is made in the skull and a controlled cortical impact (CCI) injury is made in the right frontal lobe. Controlled vacuum is applied to a sub-set of animals. 2nd Major Surgery: the vacuum dressing is removed and the incision site sutured closed. The animal is allowed to recover for later evaluation by magnetic resonance imaging.
- 5. Purpose and value of study:** Injury to brains are often progressive, they worsen over time due to swelling of the brain within the skull. Previous studies in our lab have shown that application of a controlled vacuum to other progressive injuries (burns, spinal cord, etc.) prevents or greatly decreases the severity of injury. This study examines the effect of applying a controlled vacuum to a brain that has been damaged with a contusion injury.

- 1. Species (Common Name):** Swine
- 2. Number of Animals:** 22
- 3. Exception:** Multiple Major Survival Surgeries
- 4. Description:** First major surgery: One to 2 branches of the middle cerebral artery are manually occluded via a craniotomy, and a vacuum dressing is placed and vacuum applied to the area of ischemia. The second major surgery: The incision is opened and the vacuum dressing removed, and the incision is re-sutured closed.

5. Purpose and Value of Study: This work seeks evidence that a vacuum dressing can reduce the impact of strokes.

1. **Species (common name):** Swine
2. **Number of animals:** Up to 40
3. **Exception:** Multiple Major Survival Surgeries
4. **Description:** 1st Major Surgery: Unilateral nephrectomy for primary renal cell harvest. 2nd Major Surgery: Implantation: Bioengineered scaffolds.
5. **Purpose and value of study:** The purpose of this work is to develop a procedure to transplant kidneys, which have been stripped of their native animal cells and replaced with human cells. The purpose of the present study is to demonstrate that: 1] kidneys taken from pigs can be successfully placed back in pigs; and 2] blood flow within the transplanted kidney can be maintained after implantation.

1. **Species (Common Name):** Dog
2. **Number of Animals:** 171
3. **Exception:** Multiple Major Survival Surgeries
4. **Description:** First major surgery: Creation of urinary incontinence via stripping of the urinary sphincter muscle. Second Major Surgery: Muscle cells collected from quadriceps biopsy and expanded in the laboratory will be injected into the urinary sphincter.
5. **Purpose and value of study:** Urinary leakage is a very common condition in middle aged and older women. It is considered to be one of the highest costing conditions in the USA every year. Women suffering from this condition are in continuous stress due to the embarrassment as well as the social handicap that it causes. There are many complications associated with these treatments and the success rate is not perfect. The present study seeks a permanent improvement using the patient's own tissues.

1. **Species (Common Name):** Monkey
2. **Number of animals:** 10
3. **Exception:** Singly Housed Primates
4. **Description:** There are published data suggesting that social stress affects dopaminergic systems in the brain as well as the reinforcing effects of drugs, like cocaine. These studies assess physiological and behavior measurements related to dopamine D2 receptors, and social housing can reasonably be expected to confound our findings.
5. **Purpose and value of study:** These studies will help characterize which of cocaine's effects on the brain are responsible for driving cocaine use in addicts. A better understanding of these factors may lead to new and better treatment strategies for cocaine addiction, for which there are currently no FDA-approved drug treatments.

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1. **Species (Common Name):** Monkey
2. **Number of animals:** 10
3. **Exception:** Singly Housed Primates
4. **Description:** Each cage is equipped with an operant panel from which the subjects self-administer their food, water and/or ethanol. Animals are individually housed in order to continuously measure their intake.
5. **Purpose and value of study:** The objective is to better understand how the brain changes in response to ethanol in an attempt to develop more effective strategies for treatment of alcoholism.

1. **Species (Common Name):** Monkey
2. **Number of animals:** 22
3. **Exception:** Singly Housed Primates
4. **Description:** There are published data suggesting that social stress affects both dopamine D₂ receptor levels in the brain and sensitivity to the reinforcing effects of cocaine. As the present study involves measurement of both of these parameters it is likely that social housing conditions would impact our findings.
5. **Purpose and value of study:** The purpose of these studies is to identify baseline changes in the brain resulting from exposure to extended cocaine self-administration, and to determine whether these changes persist into a period of abstinence from the drug. By characterizing the specific areas and systems in the brain which are affected by cocaine we hope to facilitate the development of medications to treat addiction.