Art

Derry, Lewis, Art (ART 2254), Faculty mentor: Mark Lambert

Soda-fired Surfaces

Since the winter of 2015 I have been researching the pottery kiln firing experiments of Ceramic Artist Gail Nichols. Gail Nichols pioneered a new methodology for firing soda kilns. Because of her contributions, she has opened up an entirely new aesthetic in ceramics, which is a lot to say for a 20,000 year old craft. For the past year I have been experimenting and testing each element of Gail's firing methodology and I have invested many hours designing and hand-building needed sensors, firing kilns, and testing many different types of clays and glazes in search of a fresh pallet of colors to use for our ceramic art.

Biology

Bolden, Samantha and Mickayla Gunsten, Biology (BIOL 2208), Faculty Mentor: Paula Croonquist

Comparative Genomics Analysis of *Drosophila fiscusphila* Heterochromatic chromosome 4 contig 35

The Drosophila chromosome 4, known as the "dot chromosome" or Müller F element is predominantly heterochromatic. There is evidence however that 80 genes are actively transcribed in this region. The mechanism by which active transcription is carried out in this environment is under investigation. It is hypothesized that chromosome 4 genes share common elements in their transcriptional start sites that may explain their levels of transcription in this highly compacted environment similar to the other euchromatic autosomes. As part of the Genomics Education Partnership (GEP) undergraduate research initiative, the goal of this study was to annotate all features in Contig 35 of*Drosophila ficusphila* chromosome 4 utilizing a comparative genomics approach and several bioinformatics tools including the Basic Local Alignment Search Tool (BLAST), the UCSC Genome Browser, and gene predictors such as GENSCAN and N-SCAN, as well as RNA-Seq data and TopHat junctions. The *Drosophila melanogaster* genome was used as a reference for gene orthology. It was found that five genes, toy, Poxm, gsp, *myo, and ey*, with orthologs in *D. melanogaster* are located in contig.35. Gene models were proposed based on all gathered evidence that allowed for annotation of exact coordinates for each intron and exon of all isoforms for each gene homolog. We are currently analyzing the transcriptional start sites that may shed light on how these genes can be expressed in such a highly heterochromatic environment.

Bridgeman, Mikayla, Erin Seeman and Jessica Howell. Biology (BIOL 1107), Faculty Mentor: Kristen Genet

Survivorship of Women in Different Climates

As residents of a cooler state we were curious to see if there were any variations in survivorship in different climates. We came up with the central question: what is the effect of climate on the survivorship of women? Then, we hypothesized that there is a negative effect of a warm climate on women in urban areas, and predicted that individuals from a cool climate would have a greater survivorship than those from a warm climate. Humans fall under the type one curve for survivorship because they take care of their young until adulthood. We used online cemetery records to determine the age at death of 200 women from each climate category. We used this information to get a standardized number of individuals and then graphed and interpreted our results. The data showed that as women reached a greater age, those from the warmer climate had fewer survivors representing them.

Degler, Dyllon and Jasmine Johnson, Biology (BIOL 2208), Faculty Mentor: Paula Croonquist

Comparative Genomics Analysis of *Drosophila ficusphila* heterochromatic chromosome 4 contig 6

The Drosophila chromosome 4, known as the "dot chromosome" or Müller F element is predominantly heterochromatic. There is evidence however that 2 genes are actively transcribed in this region. The mechanism by which active transcription is carried out in this environment is under investigation. It is hypothesized that chromosome 4 genes share common elements in their transcriptional start sites that may explain their levels of transcription in this highly compacted environment similar to the other euchromatic autosomes. As part of the Genomics Education Partnership (GEP) undergraduate research initiative, the goal of this study was to annotate all features in Contig 6 of *Drosophila ficusphila* chromosome 4 utilizing a comparative genomics approach and several bioinformatics tools including the Basic Local Alignment Search Tool (BLAST), the UCSC Genome Browser, and gene predictors such as GENSCAN and N-SCAN, as well as RNA-Seq data and TopHat junctions. The *Drosophila melanogaster* genome was used as a reference for gene orthology. It was found that two genes*, ank, and CG3200*, with orthologs in *D. melanogaster* are located in contig.6 (contig6.001.1 & contig6.002.1). Gene models were proposed based on all gathered evidence that allowed for annotation of exact coordinates for each intron and exon of all isoforms for each gene homolog. We are currently analyzing the transcriptional start sites that may shed light on how these genes can be expressed in such a highly heterochromatic environment.

Fields, Andrew and Alex Trombley, Biology (BIOL 2208), Faculty Mentor: Paula Croonquist

Comparative Genomics Analysis of *Drosophila ficusphil*a heterochromatic chromosome 4 contig 19

The Drosophila chromosome 4, known as the "dot chromosome" or Müller F element is predominantly heterochromatic. There is evidence however that 80 genes are actively transcribed in this region. The mechanism by which active transcription is carried out in this environment is under investigation. It is hypothesized that chromosome 4 genes share common elements in their transcriptional start sites that may explain their levels of transcription in this highly compacted environment similar to the other euchromatic autosomes. As part of the Genomics Education Partnership (GEP) undergraduate research initiative, the goal of this study was to annotate all features in Contig 19 of *Drosophila ficusphila* chromosome 4 utilizing a comparative genomics approach and several bioinformatics tools including the Basic Local Alignment Search Tool (BLAST), the UCSC Genome Browser, and gene predictors such as GENSCAN and N-SCAN, as well as RNA-Seq data and TopHat junctions. The *Drosophila melanogaster* genome was used as a reference for gene orthology. It was found that two genes, *CG3285*, and *PMCA* with orthologs in *D. melanogaster* are located in contig 19. Gene models were proposed based on all gathered evidence that allowed for annotation of exact coordinates for each intron and exon of all isoforms for each gene homolog. We are currently analyzing the transcriptional start sites that may shed light on how these genes can be expressed in such a highly heterochromatic environment.

Gentle, Sam. Biology (BIOL 2230). Faculty Mentor: Kristen Genet

Long term Effects of Human Traffic and Land Improvements on Bald Eagle Population at Lake Coeur d'Alene, Idaho

Lake Coeur d'Alene, Idaho is a popular wintering location of Bald Eagle (Haliaeetus leucocephalus). Many factors affect the populations of wintering Bald Eagles populations including food availability, human impacts, etc. Eleven sites were surveyed annually for adult and immature Bald Eagle populations in the Lake Coeur d'Alene area for twenty years. Sites had statistical analysis performed on them to determine relationships between site improvements, human foot traffic, primary road access and primary road access per shoreline. The only statistically significant difference found was between sites of low and high human foot traffic. Further geographical analysis is required to understand human development relationships and wintering Bald Eagle populations.

Krier, Jared, Biology (BIOL 2201), Faculty Mentor: Debby Filler

Fighting *Mycobacterium* with Viral Infection

New reports of tuberculosis show it is becoming more drug resistant. One way to combat drug resistance is through phage (viral) therapy. Phage therapy uses viral infection of bacterial cells to kill the bacteria. This research, conducted in collaboration with the University of Pittsburgh, tests the ability of multiple phages to infect different strains of *Mycobacterium smegmatis*, a relative of the *Mycobacterium* that causes tuberculosis. Once developed, this project will be developed into a laboratory module for BIOL 2201 (Microbiology).

Larson, Rebekah. Biology (BIOL 2230, Directed Research in Biology), Faculty Mentor: Scott Danneman

Resistance to Tetracycline and Erythromycin in *Enterococcus* from a Captive Wolf's Intestine

Enterococcus is a bacterium that is able to live anaerobically, without the presence of oxygen. *Enterococcus* species are commonly found in the urinary and intestinal tracts of many higher mammals, including humans and a captive population of wolves. Increasing bacterial resistance to antibiotics is creating new challenges in both human healthcare and veterinary medical care. The focus of this experiment was to determine the resistance of an *Enterococcus* isolate against selected antibiotics. It was hypothesized that one or more of the antibiotics tested would be ineffective against the *Enterococcus* isolate. Spread plates were made with a broth culture from the isolate and a disk diffusion assay was performed. Zones of inhibition were measured, and resistance to tetracycline and erythromycin were noted. Polymerase Chain Reaction and gel electrophoresis were performed to assess the presence of selected resistance genes, and indicated that the tetracycline resistant gene TetM was present in the isolate.

Larson, Rebekah and Nguyen Tran, Biology (BIOL 2208), Faculty Mentor: Paula Croonquist

Comparative Genomics Analysis of *Drosophila ficusphila* heterochromatic chromosome 4 contig 46

The Drosophila chromosome 4, known as the "dot chromosome" or Müller F element is predominantly heterochromatic. There is evidence however that 80 genes are actively transcribed in this region. The mechanism by which active transcription is carried out in this environment is under investigation. It is hypothesized that chromosome 4 genes share common elements in their transcriptional start sites that may explain their levels of transcription in this highly compacted environment similar to the other euchromatic autosomes. As part of the Genomics Education Partnership (GEP) undergraduate research initiative, the goal of this study was to annotate all features in Contig 46 of *Drosophila ficusphila* chromosome 4 utilizing a comparative genomics approach and several bioinformatics tools

including the Basic Local Alignment Search Tool (BLAST), the UCSC Genome Browser, and gene predictors such as GENSCAN and N-SCAN, as well as RNA-Seq data and TopHat junctions. The *Drosophila melanogaster* genome was used as a reference for gene orthology. Gene models were proposed based on all gathered evidence that allowed for annotation of exact coordinates for each intron and exon of all isoforms for each gene homolog. We are currently analyzing the transcriptional start sites that may shed light on how these genes can be expressed in such a highly heterochromatic environment.

LaVasseur, Steve. Biology (BIOL 2299), Faculty Mentor: Kristen Genet

Water Quality of Lochness Lake, Blaine, MN

Lochness Lake in Blaine, MN has been monitored by the Rice Creek Watershed District, Metropolitan Council, and the City of Blaine since 2007. In 2015, responsibility for collecting data on water temperature, clarity, dissolved oxygen, and water samples for chemical analyses was turned over to a newly established partnership with Anoka-Ramsey Community College. From May through September, we visited Lochness Lake every other week to document chemical and physical features of the lake that were contributed to a statewide database used in water quality assessment. We were able to compare water quality from 2015 to previous years. These data will provide a baseline against which we can compare future monitoring data to assess the impact of increased business and residential development in the surrounding area.

LaZerte, Tyler, Biology (BIOL 1110), Faculty Mentor: Jennifer Braido

The Effects of Captive Predatory Species on the Behavior of Wild Animals Exposed Using Camera Traps

The purpose of this investigation was to determine the effect of the presence of captive predatory species on the behavior of wild animals. Our study location was the Wildlife Science Center in Linwood, Minnesota. We hypothesized wild predatory species would be attracted to or inquisitive of captive predator species due to their natural relationships in common territory whereas wild prey species would avoid captive fauna due to their innate fear of predators. We deployed two camera traps in two distinct areas of our study location; one set at the entrance to the grounds along a driveway and a second set approximately seventy-five and one hundred feet from two predatory species' enclosures in a wooded area. Data was collected for five weeks and included organisms detected, proximity of each captured animal to the nearest enclosure, and activity of each species. Prey animals such as squirrels, rabbits, and opossums were predominantly detected by the camera closest to the enclosures while predatory species such as coyote and grey fox were almost equally detected by both cameras. Our findings indicate the presence of captive predatory animals has no significant effect on the behavior of wild animals, instead it is possible prey species feel safer in a wooded area with more cover availability whereas larger predatory species prefer the convenience of the trail provided by the

driveway for movement along the grounds. Additional studies are needed to discern the effects of the presence of captive predatory animals on the behavior of wild animals.

Leng, Tyler, Biology, Faculty Mentor: Paula Croonquist

Genetic and Phenotypic Characterization of Woyotes: An Experimental Hybridization of Western Gray Wolf with Western Coyote

The taxonomic identity of the historical western Gray wolf (*Canis Lupus)* and the eastern wolf (*Canis Lycaon*) remains controversial. Based on limited genetic data (la28 haplotype) shared by western coyotes (*Canis Latrans*) and western wolves, and it has been suggested that a cross between the two may have been the origin of eastern wolves. However, these two species do not mate in the wild. Scientists at the Wildlife Science Center, and Dr. David Mech collaborated to hybridize captive western wolves with western coyotes to elucidate the ancestry, genetics, and phenotypes of these two species and the hybrids. The mating produced a litter of six hybrid pups (woyotes). Our aim is to confirm genetically that the woyotes are hybrids, and ascertain admixture by utilizing and analyzing 21 ancestry informative SNPs. Our data indicates that the hybridization resulted from more than one sires' sperm's fertilization of the dam's ova, and these hybrids are indeed heterozygotes for wolf and coyote alleles. We hypothesized that if indeed hybridization gave rise to a new subspecies, that hybrid vigor and/or intermediate phenotypes would be displayed. The phenotypic study of the woyotes has taken several approaches; the identification of distal gut microbiota by a culture-independent assay that involves sequencing 16S rRNA encoding gene. Results suggest that the F1 woyotes may have an intestinal microbiome distinct from previous reports for gray wolves. Furthermore, we isolated total RNA from peripheral woyote and sire blood, sequenced it utilizing the Illumina platform, and are analyzing differential gene expression of hybrid to western wolf controls by bioinformatics. Semi-quantitative RT-PCR confirms that the *MAPK* and *BETA CATENIN* genes are differentially expressed in the hybrids when compared to control wolves. Further studies assessing morphology and behavior will shed light on whether phenotypic differences provide a heterozygote advantage for these hybrids.

Leng, Tyler and Janine Lundberg, Biology (BIOL 2208), Faculty Mentor: Paula Croonquist

Comparative Genomics Analysis of *Drosophila ficusphila* heterochromatic chromosome 4 contig 1.

The Drosophila chromosome 4, known as the "dot chromosome" or Müller F element is predominantly heterochromatic. There is evidence however that 80 genes are actively transcribed in this region. The mechanism by which active transcription is carried out in this environment is under investigation. It is hypothesized that chromosome 4 genes share common elements in their transcriptional start sites that may explain their levels of transcription in this highly compacted environment similar to the other euchromatic autosomes. As part of the

Genomics Education Partnership (GEP) undergraduate research initiative, the goal of this study was to annotate all features in Contig. 1 of *Drosophila ficusphila* chromosome 4 utilizing a comparative genomics approach and several bioinformatics tools including the Basic Local Alignment Search Tool (BLAST), the UCSC Genome Browser, and gene predictors such as GENSCAN and N-SCAN, as well as RNA-Seq data and TopHat junctions. The *Drosophila melanogaster* genome was used as a reference for gene orthology. Gene models were proposed based on all gathered evidence that allowed for annotation of exact coordinates for each intron and exon of all isoforms for each gene homolog. We are currently analyzing the transcriptional start sites that may shed light on how these genes can be expressed in such a highly heterochromatic environment.

Leng, Tyler and Katherine Sprung, Biology (MAYO IMPACT Research Program), Faculty Mentor: Julie Readinger

Development of Bipolar Disorder in Fetus Caused by Low Progesterone During Pregnancy: LPS, TLR4, and TRYCAT Mediated Pathway.

In patients with bipolar disorder (BD), several physiological changes are observed, including an underdevelopment of brain areas responsible for mood regulation, lower levels of serotonin and melatonin, and increased levels of pro-inflammatory cytokines. An increase in exposure to lipopolysaccharide (LPS) may be the cause for increased pro-inflammatory cytokines in BD. LPS binds to toll-like receptor 4 (TLR4) on the intestinal epithelium, which triggers a cascade of cytokine release, intestinal epithelial barrier dysfunction, and activation of TRYCAT pathways. Low levels of progesterone during pregnancy have been shown to lead to fetal exposure to LPS. It was hypothesized that low progesterone levels during pregnancy cause bipolar disorder in the fetus via exposure to LPS through a TLR4-mediated inflammatory response and activation of tryptophan catabolite (TRYCAT) pathways. TRYCAT pathways break down tryptophan, removing it from the synthesis of serotonin, melatonin, and other chemicals that have altered levels in BD, and some TRYCATS themselves also have neurodegenerative properties. The role that low progesterone during pregnancy has on BD development through this proposed pathway has not been previously investigated, which opens opportunities for new studies on diagnosis, treatment, and prevention.

Pham, Quynh and Rebekah Larson, Biology (MAYO IMPACT Research Program), Faculty Mentor: Paula Croonquist

Investigating and the Cell of Origin and Genetic Hits Required for Sporadic Fallopian Tube Epithelium Transformation to Ovarian Cancer

Ovarian cancer is a leading cause of death among gynecological diseases. Recent studies have indicated the origin of High Grade Serous Ovarian Cancer (HGSOC) to be the epithelial cells of

the distal fallopian tubes rather than the ovaries. The number of stem cell divisions strongly correlates with higher cancer risk, mainly due to endogenous mutations (during DNA replication). Peg cells within the fallopian tube and the fimbriae are similar in ability to stem cells. Two important genes being considered in the oncogenesis of ovarian cancer are p53, which has a key role as a tumor-suppressor, and PI3K, a critical kinase in a pathway leading to cell proliferation and extended life of cells. We hypothesized that overexpression of constitutively active PI3K and loss of p53 activity in Peg cells are required lesions leading to fallopian tube epithelial cells (FTEC) transformation into ovarian cancer. A three-prong experimental approach including in vitro, xenograft and in vivo systems is proposed to test this hypothesis. Peg cells overexpressing constitutively active PI3K with loss of p53 activity in an in vivo mouse model, in which the cell that originates the tumor can be tracked (by GFP reporter expression) could determine whether these are the cancer stem cells and driver mutations respectively that give rise to and maintain HGSOC. Furthermore, combination therapy utilizing PI3K and ReACp53 aggregation inhibitors may prove most beneficial in treating HGSOC patients.

Schiller, David. Biology (BIOL 2208), Faculty Mentor: Paula Croonquist

Heterochromatic Hereabouts

Will orally explain the process of gene annotation, heterochromatic regions of DNA, why annotation of this DNA matters (considering its heterochromatic state, why is there even anything to annotate?), and some of the more interesting aspects for my contribution to this project, the annotation of Contiguous Sequence 5.

Schiller, David, Andrew Fields, and Alexa DeFord-Mason. Biology (BIOL 1107), Faculty Mentor: Kristen Genet

Location Characteristics and Survivorship: Comparative Analysis of London and the Twin Cities

London, England is one of the largest cities in the world, describable almost as a mega-city, while in Minnesota two sister cities that share metropolitan area, Minneapolis and St. Paul, exhibit but a portion the levels of urbanization London possesses. In this study, degree of urbanization was hypothesized to affect survivorship. The ages of people who died between 2010 and 2015 in random population samples of both London and the Twin cities were compared. Survivorship curves were utilized, demonstrating a negative correlation between survival rates and greater urbanization, supporting our hypothesis. Correlation is largely attributed to London's larger population density, creating a crowded and less hospitable environment; as well as higher than normal standard of living conditions in the Twin Cities.

English

Havener, Kalie Havener and David Cocherell. English, Faculty Mentor: Jasmin Ziegler

The Internship: Working as Assistant Editors for Poetry City, USA

Poetry City, USA is an annually published journal of poetry and prose on poetry open to all submissions. We have been publishing continually since 2011. Each issue is available on a limited basis in print, and free in cyber editions. One of our missions is to teach and nurture students in AFA in Creative Writing programs in the Twin Cities (Minneapolis and St. Paul) metro area. Our goal is to teach them how to be good readers, editors, and purveyors of poetry, and to help them as they navigate their careers and become poets, editors, publishers, teachers, et cetera. We have three resident editors who work with a staff of assistant editors affiliated with AFA in Creative Writing Programs at Anoka Ramsey Community College, Normandale Community College, and North Hennepin Community College.

Music

Pernula, Katie, Music (MUSC 1112), Faculty Mentor: Liz Kuivinen

Breathe (performance)

The main idea behind this song is the feeling of being terrified to give a piece of yourself away.

Porter, Joseph, Music (MUSC 1112), Faculty Mentor: Liz Kuivinen

Tin-Man (performance)

I am performing a song that I wrote called “Tin-Man” that is about someone who wants to have a heart again. We all lost someone we love, or miss someone we love, and I’m documenting that in this song.

Walbolt, Ben, Music (MUSC 1112), Faculty Mentor: Liz Kuivinen

Circus Circle

Depction of ‘Addiction’ in form of a song.

Philosophy

Erickson, Summer. Philosophy (PHIL 1110), Faculty Mentor: Monica Janzen

LOUD Team: Civic Engagement

In this project, I led a team of teenagers every other week, on Sunday mornings, in LOUD Team. I worked with children from Kindergarten all the way to Fifth grade. We organized songs to do with the kids, came up with and practiced actions (dance moves), and hung out with the kids before and during services. I also worked in other aspects of kid's ministry outside of LOUD at this point in time as well. Sometimes I was a small group leader, and helped lead a group of kid's in discussion about the lesson of that day. There are a variety of different things in children's ministry, and while worship is important, it is only a small part of what goes on. Making sure the kids have a safe place to go is a priority, and hanging out with them before and during service is vital to do that. I played games with them and sometimes even just talked to them. It all added up.

Megears, Andrew, Philosophy (PHIL 1110), Faculty Mentor: Monica Janzen

Run to Remember

My name is Andrew Megears and I raised money for the Alzheimers Association. All of the money I raised was donated towards research to help better understand this disease which in turn will hopefully lead to a cure. To help promote this I ran on Saturday November 28th from 7am to 7pm around Lake Calhoun in Minneapolis. I accepted donations until December 7th, 2015, which is the first anniversary of losing my grandmother to this disease. I watched her suffer from it for years up until she passed and I felt like there wasn't much I could do to prevent it from becoming worse. This means a lot to me. Words cannot express how thankful I am towards anyone who contributed.

Physical Therapy Assistant

Anderson, Denny and Steve Crooks. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

NeuroCom Smart Balance Master

Dr. Nasher developed CDP – computerized dynamic posturography. Which uses a series of dynamic protocols to isolate and assess balance function deficiencies. This led to the development founded NeuroCom Int Inc. NASA partnered with NeuroCom to help pilots and astronauts with readjusting to earth's gravity. The simple task of standing upright requires complex cooperation of motor and sensory systems including visions, vestibular, and somatosensory (proprioception). Weakness in any of these areas can cause difficulties with balance. NeuroCom challenges patients using different testing to identify weak areas.

Bergman, ReBecca and Sarah Kinny. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Muscle Energy Technique

Muscle Energy Technique (MET) is a direct and active therapy technique in which a patient isometrically contracts a muscle against therapist resistance. The patient is positioned to focus on activating muscles in as many planes of barriers as possible. MET has many goals including restoring normal tone in hypertonic muscles, strengthening weak muscles, preparing muscles for stretching, increasing joint mobility, and decreasing pain.

Henning, Alyson and Lisa Larson. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Instrumented Assisted Soft Tissue Mobilization (IASTM)

Tools assisting in the massage of connective tissues that are too deep or not as accessible with hands and fingers. It can also be used for tissue needing the amplifications effect of a tool to give a more efficient treatment. And tissue that is requiring stronger forces which can cause too much mechanical stress upon the therapist's joints; the use of tools can reduce or eliminate this stress. This therapy technique is used in conjunction with other therapies to decrease pain and increase a patient's range of motion.

Honomichl, Maribeth and Amber Mattson-Gruba. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Pilates

Pilates has 6 original principles that will both establish and improve the quality of your workout: centering, concentration, control, precision, breathing, and flow. The benefits of Pilates include a mind-body workout, the development of a strong core, and increased flexibility. Pilates also conditions the body overall to improve sports performance and prevent injuries. Various equipment can be used to perform Pilates, but it can also involve simple exercises performed on a mat.

Hornberger, Joshua and Channing Ronallo. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Lymphedema

Lymphedema is the increase in interstitial volume due to the accumulation of proteins which leads to swelling, adipose tissue hypertrophy, fibrosis, and debilitations. Lymphedema is treatable but if left untreated can lead to enormous limbs along with other tissue changes. Lymphedema is treated with exercises, wrapping, massage, pneumatic compression, compression garments, Kinesio Taping, and Combined Decongestive Therapy (CDT).

Johnson, Anne. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Knowledge of Physical Therapy: An On-Campus Survey

The purpose of this study is "to better understand the perception the public has regarding the field of Physical Therapy." An example of the questions to be answered with this survey: "Are people able to differentiate between levels of education for PT vs. other health professions?" " Do people view PTs as practitioners of choice? And "Do people know the specialties that PTs and PTAs are able to treat?" This was a Qualitative Exploratory Research Study including an anonymous survey made up of 8 questions. The criteria for participants were they had to be 18 years or older. The student included students, staff, faculty, or other. Survey data was collected using online survey using Survey Monkey (emailed out to both campuses, Coon Rapids and Cambridge) and paper surveys given on campus.

Judd, Mike and Katheryn Jasken. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Alter-G

Alter-G is an anti-gravity treadmill that enhances the ability of patients to recover faster and with less pain while reducing risk of further injury. It provides therapists with a precise way to track patient's progress. This device acts as both a rehab device and a wellness tool to entice patients to continue exercise beyond short term rehabilitation.

Kivel, Cori and Stephanie Thompson. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Constraint Induced Movement Therapy

Constraint Induced Movement Therapy (CIMT) forces the use of the affected side by restraining the unaffected side. The unaffected UR is placed in a sling or cast or mitt while the affected arm is repetitively and intensively used for a set number of weeks. During this time, cortical reorganization teaches the brain to grow new neural pathways overcoming the learned non-use of the affected. This therapy increases strength and quality of movement of the affected limb as well as increasing amount of use.

Knapp, Becky and Lisa Kapsner-Swift. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

LSVT BIG

LSVT BIG is an evidence-based treatment program for patients with Parkinson's disease that focuses on the single goal of "moving BIG" with whole-body movements. These movements target amplitude instead of strength, balance, or flexibility. It requires high physical and mental effort on the patient's part to perform. Exercises are performed repetitively every day and should be continued to prevent a patient's regression or progression of the disease process.

Mather, Brooke and Kelsie Johnson. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Wiihabilitation

Wii-Hab is an interactive and health-centric video game software using the Nintendo Wii. It aids in improving a patient's balance, proprioception, hand-eye coordination, range of motion, mobility, and overall strength. This therapy is appropriate for all ages and adds fun variety to traditional therapy, increasing patient's interest and compliance in therapy. Wii-Hab can be used by Physical, Occupational, and Speech Therapists.

McCarthy, Meredith and Emily Nagy. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Mirror Therapy

Mirror Therapy was first used by Ramachandran in 1993 for amputees with phantom limb pain. A mirror image of the patient's unaffected limb is shown in sagittal plane is used to give the illusion that the affected limb is no longer affected. The patient performs ROM exercises with their unaffected limb while watching in the mirror and their affected limb covered. Using this therapy it was found that phantom spasms and pain were rapidly relieved 50% of the time.

Nolden, Ashley and Jessie Kalenberg. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Mulligan's Concept

Mulligan's Concept is a general term used describing Brian Mulligan's techniques, which include: SNAGS, NAGS, MWM. "Concept of positional fault": injuries or sprains may result in a slight positional fault to a joint which restricts or limits a physiological movement. Each technique has variable positions and glides based upon the area affected and what technique is performed.

Ray, Austin and Derrick Schwartz. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Manual Therapy

Manual Therapy is the manipulation or mobilization of soft tissue, myofascial tissue, or muscle. It can be instrument assisted or performed by hand. This therapy can be used to decrease muscle pain or tightness, release trigger points, perform myofascial release, and can aid in initiating the healing process for a chronic injury by increasing blood flow to the area. Manual Therapy can include trigger point therapy, active release, myofascial release, and cross frictional massage.

Schlangen, Angela and Lisa Barnes. PTA (PTAC 2050), Faculty Mentor: Lisa Lentner

Yoga and Physical Therapy

Yoga is a system of physical and spiritual techniques used to achieve balance and harmony within yourself, with others, and your environment. There are many different types of yoga; they all focus on synchronized breathing with movements. Yoga also encourages a sense of body awareness, and can be used for all ages. Its use can be adapted for any and all patient populations for use in various settings in Physical Therapy.

Political Science

Abumayaleh, Huda. Political Science (POLS 1141). Faculty Mentor: Matt Schuster

Food Origins Research Project

I will be presenting my Food Origins assignment where I have researched different foods and where exactly they come from. I go into detail about the origins of food and explain the reasons for why some foods can be found and why some are difficult to find and could not be found. I researched and give detail of what is in the feed of animals and the environment they live in. I also go into detail about fruits and vegetables and the soil they are grown in.

Anderson, Nicole, Political Science (POLS 1141), Faculty Mentor: Matt Schuster

Origins Project

My project was an origin project. We take for granted on numerous occasions of where our food or our stuff came from. It is taking an item (food or stuff) and tracing it back to the earth. For the food items where was the meat raised and if possible, what did it eat. The same is true for the other food/drink items what are they made of and where did they come from? Are they local or across the land or ocean borders? Upon doing the research, you find out the ease or difficulty of tracing the chosen item back to the earth. It also makes you more conscious of what is really in the food you consume on a daily basis. It may not change your eating habits but it will open your eyes to what you are putting on the table and in your body.

Haben, Carlie, Political Science (POLS 1141), Faculty Mentor: Matt Schuster

Origins Project

The project I will be presenting is my food origins research I did as a part of my environmental politics class. During this project I was tasked with tracing back five food items back to the farm it was grown at. I started my search for food items at Trader Joe's and quickly learned I would have to look at the local food chain, so I went to my local Co-op where I found 2 of the 5 items. I surprisingly ended my search for foods at Coborns in Ramsey, MN where I found the remaining 3 foods. I then proceeded to compose email interviews to all the food companies I

found. In the end I looked into around 25 foods in order to find only 5 that were able to disclose where they grow their foods. This project taught and scared me as to how difficult it was to track down simple organic food items and how misleading marketing can be.

Sistrunk, Kathryn. Political Science (POLS 1141), Faculty Mentor: Matt Schuster

Food Origins of Spaghetti with Parmesan, Salad, and Milk

My project is about the origins of food in a meal that I commonly eat. The meal is spaghetti with parmesan, salad, and milk. From this meal, I chose five ingredients and traced their origins back to where they were grown. While the majority of the foods have their origins traced back to where they had been grown, there are a few where I was only able to trace them back to where they were manufactured. In addition to tracing the origins of the foods I commonly eat, I defined any ingredients that may be unknown to the average consumer.

Strina, Luke, Political Science (POLS 1141), Faculty Mentor: Matt Schuster

Food Origins Project

For this project, five foods needed to be traced to where they came from. Research of the corporations, companies, farms, people, etc. needed to take place. The food chosen for this this particular project were meat, cheese sticks, a bottle of water, strawberries, and Twix. All four food chains are mentioned in the project (industrial, organic, local, and do-it-yourself). This project shows how easy or hard it is to track a person's food. Shouldn't it be easy to know where your food comes from?

Tran, Kevin. Political Science (POLS 1141), Faculty Mentor: Matt Schuster

Food Origins

This is a research assignment that is going to show the origins of some food products that typical consumers have from a day to day basis. The majority of it will be Mcdonalds, Walgreens, and Aldi products.