



**NEW GRADUATE CONCENTRATION PROPOSALS**  
ARIZONA STATE UNIVERSITY  
GRADUATE COLLEGE

**This form should be used for academic units wishing to propose a new concentration for existing graduate degrees.**

A concentration is a subspecialty within a degree and major. It indicates the fulfillment of a designated, specialized course of study, which qualifies the student with skills and training in one highly concentrated area of the major. Concentrations are formally-recognized educational designations (including the assignment of a university plan code for reporting/record-keeping purposes and appearance on the ASU transcript). Concentrations are distinguished from more informal academic distinctions such as “emphases,” “tracks,” “foci,” “options,” etc.

Submit the completed and signed (chairs, unit deans) proposal to the **Office of Graduate Academic Programs**, mail code 1003 and electronic copies to [eric.wertheimer@asu.edu](mailto:eric.wertheimer@asu.edu) or [amanda.morales-calderon@asu.edu](mailto:amanda.morales-calderon@asu.edu).

**Please type.**

|  |                                       |
|--|---------------------------------------|
| <b>Contact Name(s):</b> Nancy Scherer  | <b>Contact Phone(s):</b> 480-965-2905 |
| <b>College/School/Division Name:</b> College of Health Solutions   |                                       |
| <b>Academic Unit Name:</b> Department of Speech & Hearing Science<br>(or proposing faculty group for interdisciplinary proposals)                    |                                       |
| <b>Existing Graduate Degree and Major under which this concentration will be established:</b> Doctor of Philosophy (PhD) in Speech & Hearing Science |                                       |
| <b>Proposed Concentration Name:</b> Translational Genetics of Communication Abilities  |                                       |
| <b>Requested Effective Term and Year:</b> Fall 2017<br>(e.g. Fall 2014)  |                                       |
| <b>Do Not Fill in this information: <u>Office Use Only</u></b><br><b>Plan Code:</b>  | <b>CIP Code:</b>                      |

**1. Overview**

- A. Provide a brief description (*not to exceed 150 words*) of the new concentration (*including the focus of the new concentration, relationship to other concentrations within this degree program, etc*).**

The proposed Translational Genetics of Communication Abilities concentration, henceforth as TGCA or “Translational Genetics,” will provide PhD students in Speech and Hearing Science with pioneering dual training in genetics and communication behaviors. Expertise in molecular genetics and bioinformatics will equip students to investigate genetic etiologies and their downstream effects on cognitive and behavioral phenotypes, inclusive of all levels of functioning from typical to disordered. Knowledge of genotype-phenotype associations provides the foundation for the translational components of this program: early identification and intervention, individualized management, and interprofessional approaches. This concentration leverages our strong research and clinical expertise across biosciences and translational clinical sciences. It closely interfaces with the proposed Auditory and Language Neuroscience concentration in that genetic effects on brain structures and functions can be studied to enhance our understanding of biological substrates. Graduates will have the skills to understand and use techniques to build a network of genotype-phenotype associations and contribute to more effective clinical management of communication disorders using preventative, targeted, and interprofessional methods.

## 2. Impact Assessment

- A. **Explain the unit's need for the new concentration** (e.g., market demand, research base, direction of the discipline, and interdisciplinary considerations). How will the new concentration complement the existing degree program, including enrollment, national ranking, etc.?

### 1. Direction of the Discipline

The field of communication sciences and disorders is full of opportunities for applying genomics approaches and technology toward building knowledge and improving clinical outcomes in the field of communication sciences and disorders, but there is a dire need for qualified investigators with dual training in genomics and human communication. The proposed concentration will be one of very few in the world to offer this dual training.

On January 30, 2015, President Obama announced the launch of the Precision Medicine Initiative, an innovative approach to medical management of diseases that takes individual variability into account and aims to leverage customized management toward improved health outcomes. Important components in identifying individual variability are knowledge of genetic and environmental risk factors and a detailed understanding of a patient's phenotypic profile. This departure from the "one-size-fits-all" approach focused on the "average patient" toward individualized care is already evident in the medical and clinical sciences, for instance blood typing and hearing aid fitting, respectively. We believe, however, that the field of communication disorders is ready for a global and systematic implementation of this programmatic model. For many years, our clinicians have assessed, diagnosed, and treated individuals with disorders affecting their ability to communicate, for instance individuals with speech, language, and reading disorders and individuals with hearing impairment, degenerative cognitive disorders, and motor impairments. All of these disorders can result from genetic variations, but the genotype-phenotype associations are not yet well understood except for hearing impairment. Attempts at defining disorder subtypes based on theoretical and behavioral considerations have been controversial. For instance, to date no universally accepted taxonomy of language impairment in children has been put forth. Recent research shows that communication disorders are highly heterogeneous, meaning that various different etiologies can cause similar surface phenotypes but potentially different endophenotypes in different individuals. Investigating individual variability due to genetic and environmental factors and a better understanding of biomarkers of communication disorders will allow us to

- Identify children at genetic risk during infancy. Example: Currently, dyslexia is diagnosed in second, third, or fourth grade. A better understanding of the genetic etiologies of dyslexia would make it possible to identify children at risk during infancy.
- Develop very early intervention approaches with the potential of reducing or preventing the need for post-diagnosis, remediative interventions later. Example: There is currently no validated approach to preventative intervention in childhood speech disorders. Dr. Beate Peter and four colleagues in Washington State have designed an early intervention trial in infants born with a metabolic disease of genetic etiology that is associated with speech and language disorders in nearly all cases. Longitudinal outcome measures will be compared with outcome measures in traditional speech therapy in terms of clinical efficacy and cost. If successful, preventative programs will replace many post-diagnostic approaches in cases with known genotype-phenotype associations.
- Develop effective individualized interventions. Questions regarding which of various approaches to remediate speech disorders and which treatment dosages yield the best results have only recently been addressed in clinical research. Prognostic knowledge based on genotype-phenotype associations can help inform clinical decisions regarding eligibility, treatment approach, and treatment dosage. Example: A six-year-old girl who participated in Dr. Peter's genetics study of speech sound disorders had a history of severely disordered speech. After three years of speech therapy, she was exited from therapy based on the rationale that her residual speech sound errors were also seen in some six-year-old children with typical speech development; she could be re-enrolled if she failed to self-correct by age 8 years. In our view, her speech disorder history merits a more individualized approach to providing services, not only by disorder subtype but also by using individualized benchmarks for treatment goals.
- Develop targeted interventions directed at the underlying subgroups of communicative disorders with a genetic origin or endophenotypes. Example: Our research shows that some individuals with severe speech disorders and some individuals with dyslexia have difficulty with integrating multiple processes into a complex sequence, not only during speech and reading/spelling but also during motor, linguistic, and cognitive tasks. If we determined that deficits in sequential processing was an endophenotype in a subset of individuals sharing a genetic etiology, then we could develop early intervention strategies addressing this basic underlying area of functioning.

This PhD concentration is designed to equip students with the necessary research skills toward the goals listed above. More specifically, students will learn how to apply genetic/genomic approaches and technology to identify DNA and RNA variations causing communication disorders. Example: Severe speech sound disorder runs in families or occurs sporadically due to *de novo* mutations. Students will learn which genetic/genomic approaches to select in each scenario, how to obtain the most relevant type of genotyping or sequencing data (e.g., SNP arrays, whole exome sequences, whole genome sequences), and how to use the output from DNA analysis as input for biostatistical analysis (e.g., linkage analysis, copy-number variation and structural variation analysis, exome variant filtering, and functional network analysis).

## 2. Market Demand

This Ph.D. concentration will prepare graduates for employment in an emerging and increasingly relevant market in the cross-section of genetics and human communication. Training goals range from basic science to clinical and educational applications and from typical to disordered communication abilities.

The President's Precision Medicine Initiative, launched in 2015 and with a requested budget of \$309 million for 2017, is based on the expectation that knowledge of genetic biomarkers will have a profoundly positive influence on medical management of diseases. Interest in the role of genetics in communication disorders is emerging as well. It is anticipated that future clinicians and researchers will increasingly rely on genetic findings to understand the nature of the disorder and its prognosis and to develop preventative and individualized treatment approaches. The following are examples of translations from known genetic causes to clinical practice: Children with classic galactosemia, a metabolic disease with an annual incidence rate of 1/30,000 to 1/60,000 in the US, are at high risk for severe speech and language disorders, but the highest risks are seen in those who carry two copies of the Q188R mutation. In theory, this knowledge can now be translated into earliest and preventative interventions, especially because the galactosemia diagnosis is made via newborn screening. In the US, one in 500 children (0.02%) is born with bilateral sensorineural hearing impairment; in 50% to 60% of these children, the etiology is genetic. Several hundred causal genes have already been identified, and the list continues to grow. A precise understanding of the genetic etiology can inform clinical management in important ways, for instance avoiding therapies such as cochlear implants when these are incompatible with the patient's genetic profile, and avoiding certain drugs because they may aggravate the hearing loss depending on genetic etiology.

The genetic discoveries and clinical applications in these rare disorders have direct relevance for the much more common forms of communication disorders. These include language impairment, which affects 7.4% of children in the US, speech sound disorder (3.8%), reading disorder (5%), and stuttering (5% for at least 6 months; 1% long-term). Twin studies and adoption studies have shown that there is a strong genetic component in all of these disorders, but causal genes are only beginning to be identified. It follows that finding the genetic causes of communication disorders is the crucial next step towards using this knowledge in clinical translations, especially earliest identification of infants at genetic risk and development of targeted intervention approaches. Dr. Peter's lab is already actively engaged in these activities. In 2016, she published two new candidate genes for a severe form of speech sound disorder and obtained a seed grant to investigate the efficacy of a prevention program for infants at genetic risk for speech and language impairments.

On a national level, genetics education in the clinical professions has been attempted via some professional organizations but generally not yet at the Ph.D. level. In collaboration with the American Speech-Language-Hearing Association (ASHA), the National Coalition on Health Professional Education in Genetics (NCHPEG) has created a list of suggested core competencies in genetics for all clinical professions and individual lists for the different professions, for instance speech-language pathology. Dr. Peter has initiated an interdisciplinary collaboration with the heads of educational outreach at ASHA, the American Society of Human Genetics (ASHG), and the Jackson Laboratories (JAX), which has recently taken over NCHPEG's role, regarding new approaches to genetics education in the clinical professions. A pilot version of a needs assessment survey, developed jointly by Dr. Peter and her colleagues at ASHG, ASHA, and JAX, was recently administered to over 130 practicing speech-language pathologists and graduate students. The respondents felt strongly that knowledge of genetics will be crucial for the profession in the future but that they lacked the relevant basic and applied knowledge of genetics. The same survey is currently being administered by ASHA online to several thousand practicing speech-language pathologists and audiologists in the near future.

To our knowledge, there are very few or no PhD programs in communication sciences and disorders in the US that include genetics as an integral component and focus on genotype-phenotype associations as a way to enhance diagnosis, prognosis, early identification, and clinical management. Here at ASU, we are in the unique position to be able to offer this new approach via the expertise represented in our department and college as well as collaborating units in the area. Faculty members in our department have specialized expertise in early intervention, genetics, and brain imaging. We have existing collaborations with the Barrows Neurological Institute in Phoenix, the Translational Genetics Research Institute (TGen) in Phoenix, and the Biodesign Institute at ASU.

The Translational Genetics concentration has the potential to attract highly qualified and motivated applicants and increase enrollment in our current PhD program. This would be beneficial, as there is a national shortage of PhD graduates in speech, language, and hearing sciences. This innovative and unique PhD program also has the potential of raising the national ranking of our clinical training programs in speech pathology and audiology. Similarly, the national ranking in speech-language pathology, currently a very competitive # 17, may benefit further from this new concentration as highly qualified PhD applicants may choose ASU for their master's degree training, during which it is currently already possible to obtain training in genetics via elective courses in our department.

Graduates from this concentration are qualified to enter careers in the following fields: (1) Academic appointments with research and teaching responsibilities; this will advance knowledge of genetic factors in communication abilities and disabilities, propel the clinical applications of this knowledge, and increase the small number of individuals with dual training in communication disorders and genetics, thus addressing a critical shortage in this arena. (2) Consultants to genetics professionals (genetic counselors, medical geneticists) to advise specifically on communication and developmental disorders. (3) Educational appointments in developing earliest and personalized interventions based on genetic risk factors.

ASU is ranked #1 for innovation in the U.S. News and Word Report. Creating a degree program that applies a major medical innovation to the clinical field of communication disorders here at ASU is in line with this type of innovative thinking.

- B. Please identify other related ASU programs and describe how the new concentration will complement these existing ASU programs?** *(If applicable, statements of support from affected academic unit administrators should be included with this proposal submission.)*

This program will interface directly with the proposed Speech and Hearing Science PhD concentration "Auditory & Language Neuroscience" in that brain imaging can critically enhance phenotypic profiles, thus investigating the downstream effects of genetic variation on brain structures and functions as an intermediate step in the biological account of communication disorders.

This program also interfaces with the PhD program in Molecular and Cellular Biology in the ASU School of Life Sciences. Some of the required coursework overlaps, but the Translational Genetics concentration is unique in that it has strong basic science and clinical applications in communication sciences and disorders.

Within the College of Health Solutions, the Department of Biomedical Informatics offers a PhD program with options to select specializations in Bioinformatics, Clinical Informatics, Imaging Informatics, Knowledge Discovery, and Population Health Informatics. The Bioinformatics and Imaging Informatics specializations overlap with the proposed Translational Genetics concentration, but whereas the Biomedical Informatics PhD program has an emphasis on medical sciences, the Translational Genetics concentration focuses on populations with communication disorders. Support statements from these and other impacted departments are attached. We did not receive a response from the Hugh Downs School of Human Communication, despite contacting them multiple times. However, PhD in Communication offered by this School focuses on interpersonal and organizational communication, rather than the science of speaking, hearing, and understanding language, so we do not feel there would be a conflict with our proposed concentration.

- C. Is this an interdisciplinary concentration?** *If yes, please address the relationship of the proposed concentration to other existing degree programs and any parallel or similar concentrations in those degree programs. (Please include relevant Memoranda of Understanding regarding this interdisciplinary concentration from all applicable academic units.)*

No.

### 3. Academic Requirements and Curriculum

- A. What are the total minimum hours required for the major and degree under which the proposed concentration will be established?**

84 credit hours.

- B. Please provide the admissions criteria for the proposed concentration.** *If they are identical to the admission criteria for the existing major and degree program under which this concentration will be established, you may attach a copy of these criteria as they appear on the departmental website, or other source (please indicate source). Please also list all undergraduate and graduate degrees and/or related disciplines that are required for admission to this concentration program.*

Applicants must fulfill the requirements of the Graduate College and the College of Health Solutions.

Applicants are eligible to apply to the program if they have earned a bachelor's degree in a related field and do not wish to earn a clinical master's degree or if they have earned a master's degree or equivalent in speech and hearing science, psychology, linguistics, or a related discipline from a regionally accredited institution.

Applicants must have a minimum of a 3.00 cumulative GPA (scale is 4.00 = "A") in an applicable bachelor's or master's degree program.

All applicants must submit:

1. graduate admission application and application fee
2. official transcripts
3. application cover letter and personal statement
4. GRE scores
5. three letters of recommendation
6. resume or curriculum vitae
7. proof of English proficiency

#### **Additional Application Information**

Applicants must demonstrate a strong interest in translational genetics as indicated in the applicant's written statement of academic and professional goals

Typically, applicants will have completed a master's or Au.D. degree or equivalent in speech and hearing science, psychology, linguistics or a related discipline. Applicants with a bachelor's degree, strong research interests, and a strong academic record will also be considered. Applicants who wish to study the genetics of a certain communication disorder but lack undergraduate and/or graduate level training in communication disorders will be required to take relevant courses in the Department of Speech and Hearing Science.

Students should see the program website for application deadlines.

Professional letters of recommendation must be from three individuals who are familiar with the applicant's academic record and should contain contact information for the recommenders.

- C. If the proposed concentration is part of a larger, interdisciplinary agenda, please provide additional admission information related to students who may enter with various academic backgrounds, including expected entry-level competencies. As applicable, please also address the courses that must be taken to remedy any relevant deficiencies for incoming students.**

N/A

- D. What knowledge, competencies, and skills (learning outcomes) should graduates have when they complete this proposed concentration program? Examples of program learning outcomes can be found at (<https://uoeee.asu.edu/program-outcomes>).**

Students graduating from the PhD in Speech & Hearing Science program with the proposed concentration in Translational Genetics of Communication Abilities will:

1. Demonstrate the ability to critically analyze and synthesize knowledge from the literature in the current state of genetics research related to speech, language and/or hearing.
2. Demonstrate competence in experimental design, data collection and analysis, interpretation, and communication of genetics research related to speech, language and/or hearing.
3. Demonstrate understanding of behavioral translations of genotype-phenotype associations.

- E. How will students be assessed and evaluated in achieving the knowledge, competencies, and skills outlined in 3.D. above?**

Examples of assessment methods can be found at (<http://www.asu.edu/oue/assessment.html>).

1. Demonstrate the ability to critically analyze and synthesize knowledge from the literature in the current state of genetics research related to speech, language and/or hearing.  
At least 80% of students will include a comprehensive and up-to-date literature review on current knowledge of genotype-phenotype associations in the communication behavior of interest in the Introduction section of their dissertations; the literature review will meet Lovitts' (2007) rating of "Very Good" or "Outstanding."

Receiving a grade of "pass" on the comprehensive exams. (Grading scale = pass or fail)

Successful defense of his/her dissertation focusing on genetics of communication disorders.

Exit survey upon graduation (5 point scale: very high, high, average, low, very low),  
 - 80% of students select a rating of “very high” or “high” on question #3, “How would you rate the quality of our doctoral program?”  
 - 80% of students select a rating of “very high” or “high” on the following portions of question #4: “Satisfaction with overall training program”, “satisfaction with research opportunities” and “satisfaction with coursework”

2. Demonstrate competence in experimental design, data collection and analysis, interpretation, and communication of genetics research related to speech, language and/or hearing.

At least 80% of graduating students will have submitted a 1<sup>st</sup> or 2<sup>nd</sup> author manuscript to a peer-reviewed professional genetics journal and obtained acceptance for publication.

At least 80% of graduating students will have presented at a national or international genetics conference.

At least 80% of students will report in the exit survey of their PhD program that they have interviewed for positions that are related to their program of study.

3. Demonstrate understanding of behavioral translations of genotype-phenotype associations.

At least 80% of students will include a section on clinical or behavioral relevance of their research project in the Discussion section of their dissertations; the Discussion will meet Lovitts’ (2007) rating of “Very Good” or “Outstanding.”

At least 80% of students will report in the exit survey of their PhD program that at least one of their research projects has actionable relevance for a population of individuals with certain communication abilities or disabilities.

**F. Please provide the curricular structure for the proposed concentration.**

- *Additionally, please ensure that all **new** required course proposals have been submitted to the Provost’s office through the Curriculum ChangeMaker online course proposal submission system for approval before this concentration is put on the University Graduate Council and CAPC agendas.*

| <b>Required Core Courses for the Degree</b> |  |                                     | <b>Credit Hours</b>                      |
|---|--|-------------------------------------|--|
| <i>(Prefix &amp; Number)</i>                | <i>(Course Title)</i>  | <i>(New Course?)<br/>Yes or No?</i> | <b>(Insert Section Sub-total)<br/>2</b>  |
| SHS 701                                     | Scientific Writing & Presentation in Communication Sciences & Disorders I  | Yes                                 | 1  |
| SHS 702                                     | Scientific Writing & Presentation in Communication Sciences & Disorders II | Yes                                 | 1  |
| <b>Required Concentration Courses</b>       |  |                                     | <b>Credit Hours</b>                      |
| <i>(Prefix &amp; Number)</i>                | <i>(Course Title)</i>  | <i>(New Course?)<br/>Yes or No?</i> | <b>(Insert Section Sub-total)<br/>12</b> |

|   |  |                                     |   |
|---|--|-------------------------------------|---|
| 12 credits of courses that focus on issues related to translational genetics (see Appendix III A for list of courses to choose from). These credits may be accomplished in regular graduate level (500+) courses or in special topic seminars and independent studies. The student's Program Committee will guide selection of these courses, which may be focused on a broad base of areas related to translational genetics. All Ph.D. graduates with this concentration are required to have foundational knowledge in genetics. |  | No                                  | 12  |
| <b>Required Research Courses</b><br><i>(as deemed necessary by supervisory committee)</i>   |  |                                     | <b>Credit Hours</b>   |
| <i>(Prefix &amp; Number)</i>  | <i>(Course Title)</i>  | <i>(New Course?)<br/>Yes or No?</i> | <b>(Insert Section Sub-total)</b><br><br><b>21</b>                    |
| SHS 792   | Research   | No                                  | 12  |
|   | Research methods and statistics courses selected from those listed in Appendix III B |                                     | 9   |
| <b>Elective or Research Courses</b><br><i>(as deemed necessary by supervisory committee)</i>  |  |                                     | <b>Credit Hours</b>   |
| <i>(Prefix &amp; Number)</i>  | <i>(Course Title)</i>  | <i>(New Course?)<br/>Yes or No?</i> | <b>(Insert Section Sub-total)</b><br><br><b>28</b>                    |
| Additional research or elective credits approved by the student's committee.  |  | No                                  | 28  |
| <b>Culminating Experience</b><br><i>E.g. - Capstone project, applied project, <b>thesis (masters only)</b> – 6 credit hours) or <b>dissertation (doctoral only)</b> – 12 credit hours) as applicable</i>  |  |                                     | <b>Credit Hours</b><br><b>(Insert Section Sub-total)</b><br><b>12</b> |
| SHS 799 Dissertation  |  |                                     | 12  |
| <b>Other Requirements</b><br><i>E.g. - Internships, clinical requirements, field studies as applicable</i>  |  |                                     | <b>Credit Hours</b><br><b>(Insert Section Sub-total)</b><br><b>9</b>  |
| SHS 790 Reading and Conference Professional Seminars (9 different course topics (one credit hour each):<br><br>Writing Group (1 unit x 6 semesters = 6 total units)<br>Effective Course Development, Teaching and Mentoring (1 unit)<br>Successful Grant Writing Pt 1 (1 unit)<br>Preparing for your Post Doc or Faculty Position (1 unit)  |  |                                     | 9   |
| <b>Preliminary Exam.</b> (Tracked by the academic unit) The preliminary exam research project will be within the field of translational genetics of communication abilities. Each student will give a formal presentation of their prospectus to their program committee. The defense for the preliminary exam research project includes a written document of the research project and an oral defense.  |  |                                     | 0   |

|  |           |
|--|-----------|
| <p><b>Comprehensive Examinations.</b> The comprehensive exams contain a written examination and an oral examination.</p> <p>Prior to commencing dissertation research, the student must pass a comprehensive written examination covering their field of study, which will be orally defended. Because this comprehensive examination occurs prior to dissertation research, it serves two important purposes. First, it provides an opportunity for the student to demonstrate an appropriate depth and breadth of knowledge in their primary area(s) of interest. Demonstration of an appropriate level of expertise is prerequisite to the development of a Ph.D. dissertation. Second, the exam provides an opportunity to identify any remaining area(s) of weakness that may be remediated through additional coursework or educational activities. If the weaknesses reflect fundamental problems with a student's knowledge base or his/her aptitude for interpreting and synthesizing research the student may be dismissed from the Ph.D. Program.</p> | 0         |
| <p><b><u>For doctoral programs</u></b> – as approved by the student's supervisory committee, the program can allow 30 credit hours from a previously awarded master's degree to be used for this program. As applicable, please indicate the total credit hour allowance that will be used for this program.</p>   | 30*       |
| <b>Total required credit hours</b>   | <b>84</b> |

\*Note: When approved by the student's supervisory committee and the Graduate College, this program allows 30 credit hours from a previously awarded master's degree to be used for this degree. If students do not have a master's degree, the 30 hours will be made up of additional electives and research.

- G. Please describe the primary course delivery mode, (e.g., online, face-to-face, off-site etc.). **Please note:** If this proposed initiative will be offered **completely** online, clearly state that in this section, and fill out the applicable section in the Operational Appendix.

Face-to-face.

- H. Please describe the culminating experience(s) required for completion of the existing degree and major, and the proposed concentration (e.g., thesis, dissertation, comprehensive exams, capstone course(s), practicum, applied projects, etc.).

**Doctoral Dissertation**

**Dissertation Prospectus.** Prior to conducting dissertation research, each student must submit a written dissertation prospectus that is defended orally and approved by the Dissertation Committee. The written prospectus may be in one of two formats based on approval of the Dissertation Committee:

1. The introduction and methods sections of a traditional dissertation or
2. The introduction of a traditional dissertation and the introduction and methods for a publishable manuscript.

Dissertation research may not proceed until all committee members approve the research at or following the prospectus meeting. For the proposed concentration, the dissertation research must be on a topic within the area of translational genetics concentration. In addition, if human subjects will be included in the research, IRB approval must be received before research begins. Dissertation Committee approval indicates that the committee finds the project to be of suitable scope and depth for dissertation work and that the design, as outlined in the prospectus, is sound and feasible. After successfully completing the prospectus meeting the student must have all committee members sign the *Results of the Doctoral Dissertation Proposal/Prospectus Form* and give it to the department administrator who will submit the results to the Graduate College.

**Dissertation Requirements.** The dissertation will consist of a fully documented written product of mature and original scholarship. It must be a significant contribution to knowledge that reflects the student's creativity and competence in independent research. The dissertation may be in one of two formats based on approval of the Dissertation Committee:

1. A traditional dissertation or
2. The introduction of a traditional dissertation and one or more written manuscripts ready for



submission to a peer-reviewed journal. Depending on the scope of dissertation research the Dissertation Committee may approve a single manuscript.

Students must provide members of the Dissertation Committee with copies of the written document at least **10 days** in advance of the oral defense. If the submission is late any committee member may request a delay in the prospectus meeting. The dissertation must adhere to the specific format outlined by the Graduate College. It is the student's responsibility to insure that their document meets Graduate College formatting requirements. Format review by Graduate College will not commence until the defense has been scheduled.

**Final Oral Defense.** Students must successfully complete a public oral defense of their dissertation, conducted by the Dissertation Committee. Students should be aware that the Graduate College imposes strict deadlines. Early in the semester in which they intend to defend their dissertation students should determine (1) the deadline for applying for graduation, (2) the last day to hold an oral defense, and (3) the last day to obtain final format approval (and to obtain the dean's signature).

- I. **Please describe any other requirements for completion of the existing degree and major, and the proposed concentration** (e.g., internships, foreign language skills, etc.).

Other requirements for completion of the existing degree, which would also apply to the proposed concentration:

**1. Responsible Conduct of Research & Academic Integrity Workshops (to be completed in the first year; tracked by the academic unit):** Students are required to successfully complete one workshop on the responsible conduct of research during their first semester of enrollment and one on academic integrity during their second semester of enrollment. The workshops are led by a Speech & Hearing Science faculty member. They will include online and in-person activities. Upon successful completion of this workshop, each student will receive a certificate indicating that they have successfully completed the ASU Speech & Hearing Science Responsible Conduct of Research (RCR) & Academic Integrity Workshops that fulfill or exceed the RCR requirements established by the National Institutes of Health for trainees.

**2. Teaching Requirement (tracked by the academic unit):** Students must complete successful teaching activities, typically during the third year of their PhD program. These may take a number of forms including guest lecturing in courses or assuming responsibility for teaching or developing a section of a course or an entire course.

- J. **For interdisciplinary programs**, additional sample curricular structures must be included as appendix items to this proposal relating to students with various academic backgrounds who may pursue the proposed concentration, including expected mastery of core competencies (e.g., course work, skills, and/or knowledge).

N/A

#### 4. Administration and Resources

- A. **How will the proposed concentration be administered** (including recommendations for admissions, student advisement, retention etc.)? Describe the administering body in detail, especially if the proposed concentration is part of a larger interdisciplinary initiative. How will the graduate support staffing needs for this proposed concentration program be met?

There are no additional administrative needs beyond the procedures and personnel already in place for the existing PhD program. All of the graduate support staffing needs will be met by existing support for the existing PhD program.

- B. **How many students will be admitted immediately following final approval of the concentration?** What are enrollment projections for the next three years?

We currently have over 20 PhD students in the department. We expect that the concentration, once it is approved and advertised, will double the annual PhD program enrollment. It is one of the first PhD programs in the US to combine communication (dis-)abilities and genetics.

- C. What are the resource implications for the proposed concentration, including any projected budget needs? Will new books, library holdings, equipment, laboratory space and/or personnel be required now or in the future? If multiple units/programs will collaborate in offering this concentration please discuss the resource contribution of each participating program. Letters of support must be included from all academic units that will commit resources to this concentration.**

There are no resource or budgetary implications for the proposed concentration. There are no new books, equipment, space, or personnel required, nor will anything of this kind be required in the future.

- D. Please list the primary faculty participants in this proposed concentration.**

| <i>Name</i>                       | <i>Title</i>  | <i>Area(s) of Specialization as they relate to proposed concentration</i>  |
|-----------------------------------|---|--|
| <b>Speech and Hearing Science</b> |   |  |
| Tamiko Azuma                      | Associate Professor   | Neuropsychology of Language, Learning & Memory, Traumatic Brain Injury   |
| Visar Berisha                     | Assistant Professor   | Biological Signal Processing   |
| Blair Braden                      | Assistant Professor   | MRI, autism  |
| Ayoub Daliri                      | Assistant Professor   | Cortical electrophysiology, fluency  |
| Shelley Gray                      | Professor   | Language, Learning & Memory, Developmental Language & Reading Disorders  |
| Julie Liss                        | Associate Dean and Professor  | Motor speech processes and disorders   |
| Xin Luo                           | Assistant Professor   | Cochlear implants  |
| Beate Peter                       | Assistant Professor   | Genetics, bioinformatics & neural bases of developmental speech and language disorders; cortical electrophysiology |
| Andrea Pittman                    | Professor   | Hearing impairment in children   |
| Laida Restrepo                    | Professor   | Bilingual language and literacy  |
| Corianne Rogalsky                 | Assistant Professor   | Neuroimaging & Neurogenic Language Disorders   |
| Nancy Scherer                     | Chair & Professor   | Genetic Speech & Craniofacial Disorders, Genetics, Early Intervention  |
| Jeanne Wilcox                     | Professor   | Early language and literacy interventions  |
| Yi Zhou                           | Assistant Professor   | Auditory Neurophysiology & Psychoacoustics   |
| <b>Other Departments</b>          |   |  |
| Valentin Dinu                     | Associate Professor, Biomedical Informatics                                     | Bioinformatic analysis of genomic data   |
| Li Liu                            | Assistant Professor, Biomedical Informatics                                     | Evolutionary bioinformatic analysis of genomic data  |
| Jason Newbern                     | Assistant Professor, School of Life Sciences                                    | Genetics, developmental neuroscience, neurons, glia  |
| Isabelle Schrauwen                | Assistant Professor, TGen; Adjunct Assistant Professor, School of Life Sciences | Neurogenomics  |

**Dissertation Committee:**

The Program Committee consists of the chair (typically the student's mentor) and at least two other members of the Speech and Hearing Graduate Faculty. For the proposed concentration, at least two members of the committee will be faculty associated with translational genetics. The purpose of this committee is to guide the student through the completion of the individual program of study, the initiation of programmatic research, the preliminary examination, and the comprehensive examination. Faculty from other departments and schools may be approved as Speech and Hearing Graduate faculty for the purpose of serving on student committees. The composition of the Program Committee should reflect both the range and depth of the student's academic focus areas and will often include members from other academic disciplines. The Program Committee will constitute the Preliminary Exam Committee. Upon completion of the preliminary exam the committee may continue and serve as the Comprehensive Examination Committee or different faculty may be selected to serve on the Comprehensive Examination Committee. Upon completion of the comprehensive examination a Dissertation Committee will be formed that may include some or all of the members of Comprehensive Examination Committee.

- E. Is there a graduate faculty structure for this concentration program that will differ from the original degree program graduate faculty structure (for PhD programs only)?** *If yes, please include the name of the graduate faculty group and whether they will participate in offering this concentration.*


No. The graduate faculty structure is the same as for the standalone degree program.

**5. Additional Material** — Please attach any additional information that you feel relates to the proposed concentration. (Please label accordingly, i.e., Appendix or Attachment A, B, etc.)

**Please see attached support memos and expanded course list.**

**Approvals** (if the proposal submission involves multiple units, please include letters of support from those units)

DEPARTMENT CHAIR or SCHOOL  
DIRECTOR  
(Please print or type)



2/10/17

SIGNATURE

DATE

DEAN (Please print or type)

Julie Liss



2/10/17

SIGNATURE

DATE

**The following section will be completed by the Graduate College following the recommendations of faculty governance bodies.**

DEAN, GRADUATE COLLEGE

SIGNATURE

DATE

**Please note:** Proposals for new concentrations also require the review and recommendation of approval from the University Graduate Council, Curriculum and Academic Programs Committee (CAPC), the Academic Senate (Information item only), and the Office of the Provost before they can be put into operation.

**The final approval notification will come from the Office of the Provost.**

GF1112E-92

## APPENDIX I

### OPERATIONAL INFORMATION FOR GRADUATE PROGRAMS

(This information is used to populate the [Graduate Programs Search](#)/catalog website.)

**1. Provide a brief (catalog type - no more than 150 words) program description.**

The translational genetics of communication abilities concentration will provide speech and hearing science doctoral students with training in an innovative approach in the clinical sciences pioneered here at ASU, where the concepts of precision medicine are applied to all disciplines within communication disorders. Training in molecular genetics and bioinformatics will equip students to investigate the interactions of genetic, brain-based, and behavioral traits. Knowledge of genotype-phenotype associations provides the foundation for the translational components of this program: early identification and intervention, individualized management, and interprofessional approaches. This concentration leverages not only the strong research and clinical expertise across clinical linguistics in our department, but also our expertise in the biosciences and translational clinical sciences. Upon completion of this doctoral concentration, graduates will have the skills to understand, and continue building, a network of genotype-phenotype associations and contribute to more effective clinical management of communication disorders using preventative, targeted, and interprofessional methods.

**Breakdown of requirements for the academic catalog:**

84 credit hours, a written comprehensive exam, an oral comprehensive exam, a prospectus and a dissertation

**Required Core (2 credit hours)**

SHS 701 Scientific Writing & Presentation in Communication Sciences & Disorders I (1)

SHS 702 Scientific Writing & Presentation in Communication Sciences & Disorders II (1)

**Concentration (12 credit hours)**

**Research (21 credit hours)**

SHS 792 Research (12)

Research Methods and Statistics (9)

**Electives or Additional Research (28 credit hours)**

**Other Requirements (9 credit hours)**

SHS 790 Reading and Conference Professional Seminars (9)

Preliminary Exam (0)

Comprehensive Exams (0)

**Culminating Experience (12)**

SHS 799 Dissertation (12)

**Additional Curriculum Information**

The concentration courses focus on issues related to translational genetics. These credits may be accomplished in regular graduate level (500+) courses or in special topic seminars and independent studies. The student's program committee will guide selection of these courses, which may be focused on a broad base of areas related to translational genetics. All Ph.D. graduates with this concentration are required to have foundational knowledge in genetics.

Please see the academic unit for approved concentration courses, professional seminars for SHS 790, research and electives. Other research and electives courses may be used with approval of the academic unit.

The preliminary exam research project will be within the field of translational genetics of communication abilities. Each student will give a formal presentation of their prospectus to their program committee. The defense for the preliminary exam research project includes a written document of the research project and an oral defense.

Prior to commencing dissertation research, the student must pass a comprehensive written examination covering their field of study, which will be orally defended.

When approved by the student's supervisory committee and the Graduate College, this program allows 30 credit hours from a previously awarded master's degree to be used for this degree. If students do not have a previously awarded master's degree, the 30 hours of coursework will be made up of electives and research.

**2. Contact and Support Information:**

|  |  |
|--|--|
| Office Location (Building & Room): <b>Coor Hall 2211</b>                                       | Campus mail code: <b>0102</b>  |
| Campus Telephone Number: <b>480-965-2374</b>   | Program Director (Name <b>and</b> *ASU ID):<br><b>Dr. Nancy Scherer (nscherer)</b> |
| Program email address: <b>shsgrad@asu.edu</b>  | Program Support Staff (Name <b>and</b> *ASU ID):<br><b>Jenna Roelle (jroelle)</b>  |
| Program website address:<br><b>https://chs.asu.edu/programs/speech-and-hearing-science-phd</b> | Admissions Contact (Name <b>and</b> *ASU ID):<br><b>Jenna Roelle (jroelle)</b>     |

\* *ASU ID (e.g. SHJONES)*

**3. Campus(es) where program will be offered:**

\* **To select desired box**, place cursor on the left side of the box, right click mouse, select **Properties**, under **Default Value** select **Checked**, press **OK** and the desired box will be checked.

**ASU Online only (all courses online)** – (Office of the Provost and ASU Online approval is needed)

**All other campus options (please select all that apply):**

Downtown                       Polytechnic

Tempe                                 West

**Both on-campus and**  **ASU Online (\*)** – Office of the Provost and ASU Online approval is needed for this option. (Check applicable campus from options listed).

**4. Application and iPOS Recommendations:** List the Faculty and Staff that will input admission/POS recommendations to Gportal **and** indicate their approval for Admissions and/or POS:

| Name          | ADMSN | POS |
|---------------|-------|-----|
| Nancy Scherer | X     | X   |
| Jenna Roelle  | X     | X   |
| Shelley Gray  | X     | X   |

**5. Keywords:** (List all keywords that could be used to search for this program. Keywords should be specific to the proposed program.)

Speech and Hearing Science, Genetics, Genomics, Molecular Biology, Early Identification, Early Intervention, Individualized Management, Genetic Risk, Communication Disorders, Speech, Language, Hearing

**6. Area(s) of Interest:**

\* **To select desired box**, place cursor on the left side of the box, right click mouse, select **Properties**, under **Default Value** select **Checked**, press **OK** and the desired box will be checked

A. Select **one (1)** primary area of interest from the list below that applies to this program.

- |                          |  |                                     |   |
|--------------------------|--|-------------------------------------|---|
| <input type="checkbox"/> | <a href="#"><u>Architecture &amp; Construction</u></a> | <input type="checkbox"/>            | <a href="#"><u>Interdisciplinary Studies</u></a>      |
| <input type="checkbox"/> | <a href="#"><u>Arts</u></a>                            | <input type="checkbox"/>            | <a href="#"><u>Law &amp; Justice</u></a>              |
| <input type="checkbox"/> | <a href="#"><u>Business</u></a>                        | <input type="checkbox"/>            | <a href="#"><u>Mathematics</u></a>                    |
| <input type="checkbox"/> | <a href="#"><u>Communication &amp; Media</u></a>       | <input type="checkbox"/>            | <a href="#"><u>Psychology</u></a>                     |
| <input type="checkbox"/> | <a href="#"><u>Education &amp; Teaching</u></a>        | <input type="checkbox"/>            | <a href="#"><u>STEM</u></a>                           |
| <input type="checkbox"/> | <a href="#"><u>Engineering &amp; Technology</u></a>    | <input checked="" type="checkbox"/> | <a href="#"><u>Science</u></a>                        |
| <input type="checkbox"/> | <a href="#"><u>Entrepreneurship</u></a>                | <input type="checkbox"/>            | <a href="#"><u>Social and Behavioral Sciences</u></a> |
| <input type="checkbox"/> | <a href="#"><u>Health &amp; Wellness</u></a>           | <input type="checkbox"/>            | <a href="#"><u>Sustainability</u></a>                 |
| <input type="checkbox"/> | <a href="#"><u>Humanities</u></a>                      |                                     |   |

B. Select **one (1)** secondary area of interest from the list below that applies to this program.

- |                          |  |                                     |   |
|--------------------------|--|-------------------------------------|---|
| <input type="checkbox"/> | <a href="#"><u>Architecture &amp; Construction</u></a> | <input type="checkbox"/>            | <a href="#"><u>Interdisciplinary Studies</u></a>      |
| <input type="checkbox"/> | <a href="#"><u>Arts</u></a>                            | <input type="checkbox"/>            | <a href="#"><u>Law &amp; Justice</u></a>              |
| <input type="checkbox"/> | <a href="#"><u>Business</u></a>                        | <input type="checkbox"/>            | <a href="#"><u>Mathematics</u></a>                    |
| <input type="checkbox"/> | <a href="#"><u>Communications &amp; Media</u></a>      | <input type="checkbox"/>            | <a href="#"><u>Psychology</u></a>                     |
| <input type="checkbox"/> | <a href="#"><u>Education &amp; Teaching</u></a>        | <input type="checkbox"/>            | <a href="#"><u>STEM</u></a>                           |
| <input type="checkbox"/> | <a href="#"><u>Engineering &amp; Technology</u></a>    | <input type="checkbox"/>            | <a href="#"><u>Science</u></a>                        |
| <input type="checkbox"/> | <a href="#"><u>Entrepreneurship</u></a>                | <input checked="" type="checkbox"/> | <a href="#"><u>Social and Behavioral Sciences</u></a> |
| <input type="checkbox"/> | <a href="#"><u>Health &amp; Wellness</u></a>           | <input type="checkbox"/>            | <a href="#"><u>Sustainability</u></a>                 |
| <input type="checkbox"/> | <a href="#"><u>Humanities</u></a>                      |                                     |   |

**APPENDIX II  
Support Letters**

**College of Health Solutions  
Official Submission**

**From:** Kate Lehman  
**Sent:** Thursday, January 26, 2017 11:02 AM  
**To:** Curriculum Planning  
**Cc:** Nancy Scherer  
**Subject:** concentrations for SHS PhD

Hello:

Here are the proposals for the concentrations to the PhD in SHS that were just approved for planning (The PDF includes impact statements).

Thanks,

**Kate Lehman**

Senior Director, Academic Initiatives

**ARIZONA STATE UNIVERSITY**

550 North 3rd Street, Ste. 511 | Phoenix, AZ 85004-9020

Work: 602.496.0241 | Fax: 602.496.0544 | [Kate.Lehman@asu.edu](mailto:Kate.Lehman@asu.edu)

<https://chs.asu.edu>

**Jenna Roelle**

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**From:** George Runger  
**Sent:** Friday, July 22, 2016 7:28 AM  
**To:** Nancy Scherer  
**Cc:** Jenna Roelle  
**Subject:** RE: New concentration in our PhD program

Nancy

An exciting program, we support it and are happy to participate. A few comments, Garrick Wallstrom is another faculty member in our department who works in bioinformatics and he would be good to include. We also have a part time faculty member who is full time at Mayo Clinic, Junwen Wang, and he would also be interested and provide links to Mayo Clinic. Maybe they could be added?

Our BMI 550 course is a good introduction to translational bioinformatics and you might consider requiring the course or strongly recommending it. We are also planning a second course after BMI 550 and we will send info when that is ready.

Thank you, George

---

**From:** Nancy Scherer  
**Sent:** Thursday, July 14, 2016 1:09 PM  
**To:** George Runger <George.Runger@asu.edu>  
**Cc:** Jenna Roelle <Jenna.Roelle@asu.edu>  
**Subject:** New concentration in our PhD program

George

We are proposing a new concentration in our PhD program. Some of your faculty have interacted with us on this and I want to get an email indicating that you don't see a conflict with your own program. I have attached the application for your review. Let me know if you have any questions or concerns. Nancy

Nancy J Scherer, Ph.D., CCC, ASHA Fellow  
Professor and Chair  
Speech and Hearing Science



ARIZONA STATE UNIVERSITY  
Coor Hall, 975 S. Myrtle Ave. | Tempe, AZ 85287  
Work: 480.965.2905 | Fax: 480.965.8516  
[Nancy.Scherer@asu.edu](mailto:Nancy.Scherer@asu.edu) / <https://shs.asu.edu>



School of Life Sciences – Support

**Jenna Roelle**

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**From:** Nancy Scherer  
**Sent:** Thursday, July 21, 2016 7:01 AM  
**To:** Susanne Neuer  
**Cc:** Jenna Roelle  
**Subject:** Re: Concentration for Speech and Hearing PhD

Thanks Susanne!

Nancy J. Scherer, Ph.D. CCC, ASHA Fellow  
Professor and Chair  
Speech and Hearing Science  
975 S. Myrtle Ave  
Tempe, AZ 85287  
P: 480-965-2905  
C: 423-335-6267

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**From:** Susanne Neuer <Susanne.Neuer@asu.edu>  
**Date:** Thursday, July 21, 2016 at 12:02 AM  
**To:** nscherer <Nancy.Scherer@asu.edu>  
**Subject:** Re: Concentration for Speech and Hearing PhD

Dear Nancy

the proposed concentration in translational genetics in communicative abilities in the Speech and Hearing PhD does not conflict with any of our own PhD programs.

Best regards

Susanne

Susanne Neuer, PhD  
Professor and Associate Director,  
Graduate Programs  
School of Life Sciences  
Arizona State University  
Tempe, AZ 85287-4501  
USA

Graduate office LSA 181: 480 965 1768  
Office LSE 421: 480 727 7254  
Lab LSE 440: 480 965 2950

<http://www.neuer.lab.asu.edu/>

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From: Jenna Roelle <[Jenna.Roelle@asu.edu](mailto:Jenna.Roelle@asu.edu)> on behalf of Nancy Scherer <[Nancy.Scherer@asu.edu](mailto:Nancy.Scherer@asu.edu)>  
Date: Wednesday, July 20, 2016 at 2:17 PM  
To: Susanne Neuer <[Susanne.Neuer@asu.edu](mailto:Susanne.Neuer@asu.edu)>  
Cc: Nancy Scherer <[Nancy.Scherer@asu.edu](mailto:Nancy.Scherer@asu.edu)>  
Subject: Concentration for Speech and Hearing PhD

Dear Susanne,

We have developed this proposed concentration in our PhD program in translational genetics in communicative abilities. Some of your faculty have participated in discussions about this concentration and hopefully will participate if approved. As we move forward I need an email from you indicating that it does not conflict with your own PhD program. If you have any questions please do not hesitate to contact me. Nancy

Nancy J Scherer, Ph.D., CCC, ASHA Fellow  
Professor and Chair  
Speech and Hearing Science



ARIZONA STATE UNIVERSITY

Coor Hall, 975 S. Myrtle Ave. | Tempe, AZ 85287  
Work: 480.965.2905 | Fax: 480.965.8516  
[Nancy.Scherer@asu.edu](mailto:Nancy.Scherer@asu.edu) / <https://shs.asu.edu>

School of Computing, Informatics, and Decision Systems Engineering – Impact

**From:** Sandeep Gupta  
**Sent:** Tuesday, February 14, 2017 2:57 PM  
**To:** Jenna Roelle  
**Cc:** Nancy Scherer; Sandeep Gupta  
**Subject:** RE: PhD Concentration - Sent on behalf of Nancy Scherer

Dear Jenna,

There is no conflict of this proposed concentration with the various graduate programs in computer science. It can play a synergistic role with respect to research in natural language processing, sign language understanding, and bioinformatics that is pursued by some faculty in Computer Science. I support this proposed concentration.

Sorry for the delay in response as I was on travel.

Best,  
-sg

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Sandeep Gupta, Professor, SCIDSE/ASU (<http://engineering.asu.edu/cidse>)  
Interim Director, School of Computing, Informatics, and Decision Systems Engg. (SCIDSE)  
Director, IMPACT Lab (<http://impact.asu.edu>)  
[sandeep.gupta@asu.edu](mailto:sandeep.gupta@asu.edu)  
480-965-3806 (v)  
480-965-2751 (f)  
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Department of English, College of Liberal Arts and Sciences – Support

**From:** Aaron Baker <AARON.BAKER@asu.edu>  
**Date:** Tuesday, February 7, 2017 at 1:39 AM  
**To:** Nancy Scherer <Nancy.Scherer@asu.edu>, Karen Adams <KLAdams@asu.edu>  
**Subject:** Re: PhD Concentrations

Dear Dr. Scherer,

We are writing to express our support for the two proposed new concentrations within your PhD in Speech and Hearing Science degree. These new concentrations are important changes to your degree and promise to enhance the presence and focus at ASU on important language, speech and hearing processes. They will have no negative impact on the PhD in Linguistics and Applied Linguistics in our Department, and some courses might even be useful for a few of our students. We reviewed these proposals, as did Dr. Mark James who is the head of the Linguistics and Applied Linguistics area in our department, and we are all in agreement in our support.

Sincerely,

Aaron Baker

Aaron Baker  
Chair and Professor  
Department of English  
Arizona State University  
Tempe AZ 85287-0302

Department of Psychology, College of Liberal Arts and Sciences – Impact

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**From:** Keith Crnic  
**Sent:** Thursday, February 02, 2017 8:28 AM  
**To:** Nancy Scherer <Nancy.Scherer@asu.edu>  
**Subject:** Re: PhD concentration

Hi Nancy,

The Department of Psychology is happy to support the new program concentration in translational genetics of communication abilities within the PhD degree in Speech and Hearing Science. We foresee no conflicts with Psychology programs, and potential beneficial connections are apparent. Best of luck with the proposed program.

Keith Crnic  
Chair, Department of Psychology

## College of Integrative Sciences and Arts – Support

**From:** Duane Roen  
**Sent:** Wednesday, February 01, 2017 2:27 PM  
**To:** Nancy Scherer <Nancy.Scherer@asu.edu>  
**Subject:** RE: PhD Concentrations

Nancy,

I have checked with the faculty heads in CISA. We all agree that your proposed PhD concentrations in auditory and language neuroscience and in translational genetics of communication abilities are exciting, and we are delighted to support them.

Please let me know if you need anything else.

Best,  
Duane

**Duane Roen**  
Vice Provost, Polytechnic campus  
Dean, College of Integrative Sciences and Arts  
Dean, University College  
**Arizona State University**  
College of Integrative Sciences and Arts | [cisa.asu.edu](http://cisa.asu.edu)  
University College | [universitycollege.asu.edu](http://universitycollege.asu.edu)

**College of Nursing and Health Innovation – Support**

**From:** Craig Thatcher  
**Sent:** Wednesday, February 01, 2017 2:47 PM  
**To:** Nancy Scherer <Nancy.Scherer@asu.edu>  
**Cc:** Teri Pipe <Teri.Pipe@asu.edu>  
**Subject:** Re: PhD Concentration

Dear Nancy-

Dean Pipe has asked me to respond to your request on her behalf. The College of Nursing and Health Innovation (CONHI) supports your department's two proposed new concentrations within your Ph.D. Program in Speech and Hearing Science. In fact, students in CONHI's Ph.D. Program may be interested in taking some of the genetic classes that you have outlined in your proposal!

Thank you for allowing us to review these excellent concentrations! We wish you the very best in launching these new concentrations.

Best wishes,  
Craig

**Craig D. Thatcher, DVM, MS, PhD, Diplomate ACVN**

Senior Associate Dean and Professor

Honors Faculty

College of Nursing and Health Innovation

Arizona State University

**School of Mathematical and Statistical Sciences – Support**

**From:** Hal Smith [mailto:halsmith@asu.edu]  
**Sent:** Thursday, February 02, 2017 2:36 PM  
**To:** Nancy Scherer <Nancy.Scherer@asu.edu>  
**Cc:** Al Boggess <abogges1@mainex1.asu.edu>  
**Subject:** Re: Approval to include math courses in PhD concentrations

Dear Nancy Scherer

We support your plan, expecting of course, that students are aware of any pre-requisites for the math courses.

Hal Smith  
Director for Graduate Programs  
Professor of Mathematics  
School of Mathematical & Statistical Sciences  
Arizona State University  
Tempe, AZ 85287-1804  
<http://math.asu.edu/~halsmith/>

On 1 February 2017 at 12:55, Nancy Scherer <[Nancy.Scherer@asu.edu](mailto:Nancy.Scherer@asu.edu)> wrote:

Dear Drs. Boggess and Smith,

I am emailing to request a support statement from you regarding our department's two proposed new concentrations within our PhD degree in Speech and Hearing Science: one in auditory and language neuroscience, and the other in translational genetics of communication abilities. We're seeking your support to include three math classes (APM 531, APM 532, and STP 530) as options to fulfill the requirements of these concentrations.

In the past few years, our department has expanded our faculty to include more interdisciplinary speech and language researchers. These concentrations will allow us to more effectively advertise our strength in these areas to potential graduate students who are interested in pursuing speech and language research to our PhD program in Speech and Hearing Science (SHS). These concentrations within the SHS PhD program will be focused on human speech and language processing and the neural correlates associated with these processes. Complete drafts of the proposals are attached. We have received preliminary feedback on the proposals from Graduate Education so we do not anticipate any substantive changes, but we will allow you to re-review them if there are any major changes.

If possible, please respond with a brief email stating your support by Friday, February 3rd.

Kind regards,

Nancy



## New College of Interdisciplinary Arts and Sciences – Support

---

**From:** Todd Sandrin <Todd.Sandrin@asu.edu>  
**Date:** Thursday, February 9, 2017 at 3:49 AM  
**To:** Nancy Scherer <Nancy.Scherer@asu.edu>  
**Subject:** Subject: PhD Concentrations

Dear Nancy,

Thanks for your note. We anticipate no negative impacts of these two PhD concentrations on our programs in New College.

Best regards,  
Todd

---

**Todd R. Sandrin, Ph.D.**

Professor, School of Mathematical and Natural Sciences  
Senior Sustainability Scientist - Julie Ann Wrigley Global Institute of Sustainability  
Senior Associate Dean, ASU New College | Director, NCUIRE



**Arizona State University**

4701 W. Thunderbird Rd. | Glendale, AZ 85306  
602.543.6934 | Todd.Sandrin@asu.edu

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> <[Nancy.Scherer@asu.edu](mailto:Nancy.Scherer@asu.edu)<mailto:Nancy.Scherer@asu.edu>>

> Date: Wednesday, February 1, 2017 at 12:51 PM

> To: Marlene Tromp

> <[Marlene.Tromp@asu.edu](mailto:Marlene.Tromp@asu.edu)<mailto:Marlene.Tromp@asu.edu>>, Greg Wise

> <[Greg.Wise@asu.edu](mailto:Greg.Wise@asu.edu)<mailto:Greg.Wise@asu.edu>>

> Subject: PhD Concentrations

>

> Dear Drs. Tromp and Wise,

>

> I am emailing to request a support statement from you regarding our department's two proposed new concentrations within our PhD degree in Speech and Hearing Science: one in auditory and language neuroscience, and the other in translational genetics of communication abilities.

>

> In the past few years, our department has expanded our faculty to include more interdisciplinary speech and language researchers. These concentrations will allow us to more effectively advertise our strength in these areas to potential graduate students who are interested in pursuing speech and language research to our PhD program in Speech and Hearing Science (SHS). These concentrations within the SHS PhD program will be focused on human speech and language processing and the neural correlates associated with these processes. Complete drafts of the proposals are attached. We have received preliminary feedback on the proposals from Graduate Education so we do not anticipate any substantive changes, but we will allow you to re-review them if there are any major changes.

>

> If possible, please respond with a brief email stating your support by Friday, February 3rd.

>

> Kind regards,

> Nancy

## School of Social and Family Dynamics – Support

**From:** Richard Fabes <rfabes@asu.edu>  
**Date:** Wednesday, February 1, 2017 at 1:20 PM  
**To:** Nancy Scherer <Nancy.Scherer@asu.edu>  
**Subject:** Re: PhD concentration

I support this proposal.

Richard Fabes, Director  
School of Social & Family Dynamics

On 2/1/17, 12:46 PM, Nancy Scherer wrote:

Dear Dr Fabes,

I am emailing to request a support statement from you regarding our department's proposed new concentration in translational genetics of communication abilities within our PhD degree in Speech and Hearing Science.

In the past few years, our department has expanded our faculty to include more interdisciplinary speech and language researchers. These concentrations will allow us to more effectively advertise our strength in these areas to potential graduate students who are interested in pursuing speech and language research to our PhD program in Speech and Hearing Science (SHS). This concentration within the SHS PhD program will be focused on human speech and language processing and the neural correlates associated with these processes. A complete draft of the proposal is attached. We have received preliminary feedback on the proposal from Graduate Education so we do not anticipate any substantive changes, but we will allow you to re-review it if there are any major changes.

If possible, please respond with a brief email stating your support by Friday, February 3rd.

Kind regards,  
Nancy

## APPENDIX III

### Course Lists

#### A. Previously offered courses that would fulfill the required concentration units:

BIO 543 Molecular Genetics & Genomics (3)  
CDE 533 Research Issues in Child Development (3)  
CDE 531 Theoretical Issues in Child Development (3)  
HCI 554 Outcomes Evaluation (3)  
MCB 555 Advanced Molecular and Cellular Sciences (3)  
MCB 556 Advanced Molecular and Cellular Biology II  
BMI 502 Foundations of Biomedical Informatics Methods I (3)  
BMI 502 Foundations of Biomedical Informatics Methods II (3)  
BMI 516 Advanced Biomedical Data Analysis (3)  
BMI 520 Modeling Gene Regulatory Networks (3)  
BMI 540 Problem Solving in Biomedical Informatics (3)  
BMI 550 Translational Bioinformatics (3)  
BMI 608 Project Management for Interdisciplinary Teams (3)  
BMD 501 Introduction to Biomedical Informatics  
BMD 510 Current Perspectives in Biomedical Diagnostics (3)  
BMD 598 Topic: Molecular Diagnostics (3)  
HCD 510 Interdisciplinary Approaches to Promotion of Healthy Lifestyles (3)  
MCB 555 Proteomics, Genomics and Disease  
PSY 591 Seminar: Genetic Psychology  
PSY 598 Child Care and Early Education  
SHS 598 Topic: Molecules, Markers, Management: Introduction to Genetics

#### B. Examples of previously offered courses that would meet the statistics/research methods requirements:

BMI 515 Applied Biostatistics in Medicine and Informatics (3)  
BMI 611 Applied Data Analysis (3)  
HCD 501 Biostatistics and Data Management (3)  
IBC 602 Healthcare Statistics (3)  
PSY 530 Intermediate Statistics (3)  
PSY 531 Multiple Regression in Psychological Research (3)  
PSY 532 Analysis of Multivariate Data (3)  
PSY 533 Structural Equation Modeling (3)  
PSY 534 Psychometric Methods (3)  
PSY 537 Longitudinal Growth Modeling (3)  
PSY 591 Genetic Psychology  
PSY 555 Experimental and Quasi-Experimental Designs  
PSY 598 Topic: Quantitative Research Methodology & Statistics III  
PSY 600 Research Methods

## (NEW GRADUATE INITIATIVES)

### PROPOSAL PROCEDURES CHECKLIST

Academic units should adhere to the following procedures when requesting new curricular initiatives (degrees, concentrations or certificates).

**Obtain the required approval from the Office of the Provost to move the initiative forward for internal ASU governance reviews/approvals.**

- Establishment of new curricular initiative requests; degrees, concentrations, or certificates
- Rename requests; existing degrees, concentrations or certificates
- Disestablishment requests; existing degrees, concentrations or certificates

**Submit any new courses that will be required for the new curricular program to the Curriculum ChangeMaker online course approval system for review and approval.**

- Additional information can be found at the Provost's Office Curriculum Development website: [Courses link](#)
- For questions regarding proposing new courses, send an email to: [courses@asu.edu](mailto:courses@asu.edu)

**Prepare the applicable proposal template and operational appendix for the proposed initiative.**

- New degree, concentration and certificate templates (contain proposal template and operational appendix) can be found at the Provost's Office Curriculum Development website: [Academic Programs link](#)

**Obtain letters or memos of support or collaboration. (if applicable)**

- When resources (faculty or courses) from another academic unit will be utilized
- When other academic units may be impacted by the proposed program request

**Obtain the internal reviews/approvals of the academic unit.**

- Internal faculty governance review committee(s)
- Academic unit head (e.g. Department Chair or School Director)
- Academic unit Dean (will submit approved proposal to the [curriculumplanning@asu.edu](mailto:curriculumplanning@asu.edu) email account for further ASU internal governance reviews (as applicable, University Graduate Council, CAPC and Senate)

**Additional Recommendations** - All new graduate programs require specific processes and procedures to maintain a successful degree program. Below are items that Graduate College strongly recommends that academic units establish after the program is approved for implementation.

**Set-up a Graduate Faculty Roster for new PhD Programs** – This roster will include the faculty eligible to mentor, co-chair or chair dissertations. For more information, please go to [http://graduate.asu.edu/graduate\\_faculty\\_initiative](http://graduate.asu.edu/graduate_faculty_initiative).

**Establish Satisfactory Academic Progress Policies, Processes and Guidelines** – Check within the proposing academic unit and/or college to see if there are existing academic progress policies and processes in place. If none have been established, please go to [http://graduate.asu.edu/faculty\\_staff/policies](http://graduate.asu.edu/faculty_staff/policies) and scroll down to the **academic progress review and remediation processes** (for faculty and staff) section to locate the reference tool and samples for establishing these procedures.

**Establish a Graduate Student Handbook for the New Degree Program** – Students need to know the specific requirements and milestones they must meet throughout their degree program. A Graduate Student Handbook provided to students when they are admitted to the degree program and published on the website for the new degree gives students this information. Include in the handbook the unit/college satisfactory academic progress policies, current degree program requirements (outlined in the approved proposal) and provide a link to the Graduate Policies and Procedures website. Please go to [http://graduate.asu.edu/faculty\\_staff/policies](http://graduate.asu.edu/faculty_staff/policies) to access Graduate Policies and Procedures.