E & R Grant Submission 101

ASCLS Education and Research Fund, Inc.

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With contributions from past E&R Chairs, Mary Ann McLane and George Fritsma

E&R 101 Objectives

- List the strong points of a currently funded grant.
- Develop an outline for a grant proposal
- List the steps in grant submission.

Awards, Scholarships and Grants

- *Awards* to recognize outstanding achievements, contributions, and service, celebrating the value of professional ability and commitment.
- Dolbey MLT, MLS and graduate scholarships
- Southern honorary and Kanuth and Rodak memorial scholarships
- Only source of MLS *graduate scholarships*
- *Member research grants* that support ASCLS members' scientific investigations
- The *I. Dean Spradling graduate research grant* that supports graduate students' scientific investigations.

E & R Fund Awards
Nominations due May 1

- Robin H. Mendelson Memorial Plaque, underwritten by Westminster Publishers, Inc, *Clin Lab Sci* publishers, and awarded at the House of Delegates by the ASCLS Directors
  - Outstanding service to ASCLS, ASCLS E&R Fund or to the profession
- Joseph J. Kleiner Award, $1000 and plaque, underwritten by the family of Dr. Kleiner, inventor of the Vacutainer
  - Best *Clin Lab Sci* article awarded by ASCLS E&R Fund Board of Trustees

E & R Fund Awards
Nominations due April 1

- Gloria F. "Mike" Gilbert Memorial Trustee Award, $300, underwritten by ASCLS-GA
  - MLS with $\geq$ 3 years supervising, admin, or management experience
- Annual Meeting Undergraduate Student Poster Award, $500, given by the E&R Fund to encourage students to submit posters

E&R Fund Dolbey Scholarships
Applications Due March 18

- Underwritten by ASCLS member contributions, profits from the silent auction, and the Edward Dolbey estate
  - Number awarded is based on available resources per annum
- MLT scholarship: $1000
- MLS scholarship: $1500
- Graduate scholarship: $3000

E&R Memorial Scholarship
Applications Due March 18

- MLS scholarship: $1500, MLT scholarship: $1000
- Underwritten by ASCLS member or practitioner contributions that memorialize or honor friends, colleagues, or loved ones
- Number awarded is based on available resources per annum

Bernadette Rodak Memorial Scholarship
Applications Due March 18

- Established in 2016
- MLS scholarship: $1500
- Underwritten by ASCLS member or practitioner contrubutions in memory of educator, hematologist and former E&R Trustee Bernadette ("Bunny") Rodak
- Number awarded is based on available resources per annum

Daniel K. Southern Honorary Scholarship
Michelle S. Kanuth Memorial Scholarship

- Established in 2014
- Southern MLS scholarship: $2000
- Kanuth MLS scholarship: $1500
- Underwritten by the families of Dan Southern and Michelle Kanuth, respectively, and member contributions
- Number awarded is based on available resources per annum
- Application Deadline: March 18

E & R Fund Grants
Proposals Due May 1

- I.Dean Spradling Graduate Student Research Grant
  - ≤ $3000, underwritten by Sumner & Scott Spradling in memory of I. Dean Spradling, founder, Infolab, Ind.
  - Student must be ASCLS Member
  - 2014 cycle: 7 submitted, 1 funded
    2015 cycle: 3 submitted, 1 funded
    2016 cycle: none submitted
    2017 cycle: 1 submitted, 1 funded

E & R Fund Grants
Proposals Due May 1

- ASCLS Member Research Grant
  - ≤ $5000, under written by ASCLS member contributions
    - 2014 and 2015 cycles: 7 submitted, 2 funded
    - 2016 cycle: 4 submitted, 2 awarded
    - 2017 cycle: 5 submitted, 1 awarded
  - Number awarded is based on available resources per annum

All Grant Qualifications

- U.S. citizen or permanent resident
- ASCLS Member, MLT or MLS
- I. Dean Spradling: applicant is accepted or enrolled in a graduate program in a discipline related to medical laboratory science
  - May not complete education prior to award

E & R Fund Grant Targets

- Patient Safety
  - Practices that improve patient safety
  - Medical errors in the laboratory and patient outcomes
- Value of Laboratory Services
  - Outcome of inaccurate test results in the diagnosis and treatment of patients
  - Correlation of proficiency testing, personnel standards, internal quality control and quality assessment on the validity and efficacy of test results
  - Assessment of point of care testing (POCT) and patient outcomes
  - Impact of clinical laboratory test utilization in clinical decision making process
  - New test development and modifications, validation and clinical efficacy

E & R Fund Grant Targets

- Translational Research
  - Proposals that promise to reduce disease incidence, morbidity, and mortality
- Value of Educated Personnel
  - Investigation of lab scientists role in test utilization decisions
  - Strategies leading to recognition of the contributions of laboratory professionals
  - Strategies to recruit laboratory scientists
  - Curriculum to facilitate an advanced practice model
  - Strategies to improve public image of Medical Laboratory Science
  - Correlate level of education and clinical training to validity and quality of test results

E & R Fund Grant Targets

- Clinical Laboratory Education (added in 2017 cycle)
  - Innovative educational techniques
  - Simulation laboratories
  - Student admission process and tracking success
  - Student retention
  - Research in student learning
  - Changes in MLS undergraduate or graduate education
  - Faculty development

Timeline

- We anticipate completion in one year.
- A written report is due to the E&R Fund Board of Trustees within 6 months of completion (by July 1 at the latest) describing the outcome and documenting expenditures.
- Awardees are encouraged to submit their projects for presentation at the ASCLS Annual Meeting or for publication in *Clinical Laboratory Science*.

Grant Restrictions: Not supported are…

- Purchase of equipment and supplies normally available in a clinical or research lab
- Manuscript preparation or publication costs
- Reimbursement of regular salary
- Travel to scientific meetings
- Institutional direct costs
- Educational tuition and curriculum development

For E&R Fund Information, go to…

- http://www.ascls.org/about-us/education-and-research-fund
- Grant descriptions
- Proposal guidelines
- Grant requirements
- Grant applications
- Award nominations
- Testimonials from previous grant recipients

Thanks for Attending

- For examples of good proposals, grant final reports, etc. e-mail:
- Louann Lawrence, Chair, E&R Fund Board of Trustees
- llawre97@yahoo.com

TEXAS STATE UNIVERSITY
SAN MARCOS

Clinical Laboratory Science

Memo

To: ASCLS E& R Awards Program

From: Rodney E. Rohde, PhD, MS, SV, SM (ASCP)^{cm} MB^{cm}

Date: April 24, 2012

Re: Final Report for 2009 ASCLS E&R Grant in Aid (Restricted)

In July of 2009, My project was selected for an ASCLS E&R Member Grant for my proposal "MRSA: Knowledge and Coping Mechanisms." Recipients of these awards must submit a written report to the E&R Board of Trustees within six months of the project termination date. This memo will serve as my FINAL REPORT with respect to this project. However, I may submit future E&R grant proposals to augment this project.

The grant was utilized primarily by the PI for completion of a dissertation towards a PhD in August of 2010. A dissertation proposal defense occurred in August of 2009. The project began with a pilot study in September of 2009 and the primary data collection was conducted over the remaining fall of 2009. Transcription and data analysis occurred over the spring and early summer of 2010. The grant was utilized for the following: digital recorder, multiple roundtrip travel for participant interviews, participant incentives, transcriptions, dissertation publishing, manuscript preparation, and travel costs associated with presentation of data. All monies requested for this project have been utilized. The final report has come at this present date because data from the dissertation was utilized in two other publications (a book and a journal article, items 2 & 3 below).

I am pleased to report the following peer-reviewed research products from this grant support:

(1) Ph.D. Dissertation – Rohde, R.E. 2010. Methicillin Resistant *Staphylococcus aureus (MRSA)*: Knowledge, Learning, and Adaptation. Texas State University Library, San Marcos, TX. Available at https://digital.library.txstate.edu/handle/10877/4111

(2) Rohde, Rodney E. 2011. Methicillin Resistant *Staphylococcus aureus* (MRSA) Knowledge, Learning, and Adaptation: I guess everything changes when it happens to you – their stories. LAP Lambert Academic Publishing GmbH & Co. KG, Dudweiler Landstraße 99, 66123 Saarbrücken, Germany. ISBN 978-3-8433-8225-0

(3) *Rohde RE, Ross-Gordon J. MRSA model of learning and adaptation: a qualitative study among the general public. *BMC Health Services Research*, *2012, 12:88.* Available at http://www.biomedcentral.com/bmchealthservres/

*BMC is an international journal and this publication has been listed as a "Hot Topic" on their main webpage found above in item 3.

Comment [Geo1]: Because this was a dissertation, it would now be submitted for the I. Dean Spradling Graduate Research Grant program. The Spradling was not available in 2009.

Comment [Geo2]: Winning a grant does not prevent the PI from being considered later for another unless of course the first project was not properly reported to the E&R Board of Trustees.

Comment [Geo3]: This report lacks an accounting of expenditures. Trustees want to confirm proper use of funds. Upon request the PI provided a spread sheet of expenses.

In addition to the publications above, I have presented this work to the following:

Rohde, R.E. March 31st, 2012. Healthcare Acquired Infections (HAIs): practices and review. Invited panel speaker by Johnson & Johnson, Advanced Sterilization Products per appointment on Healthcare Environmental Decontamination Advisory Board, Exploration of Standards and Science for Unique Approaches to Practice, Dallas, TX [insight on MRSA knowledge, learning, and adaptation from dissertation]

Rohde, R.E. January 22, 2011. Impact of environment on HAIs. Invited speaker by Johnson & Johnson, Advanced Sterilization Products per appointment on Healthcare Environmental Decontamination Advisory Board, Exploration of Standards and Science for Unique Approaches to Practice, Dallas, TX [Subject Matter Expert appointment to this internationally focused board]

Rohde, R.E. July 2011. Invited Roundtable per Education and Research Grant, Methicillin-Resistant *Staphylococcus aureus* (MRSA): Knowledge, Learning & Adaptation in the General Public. 79th Annual ASCLS Conference Program, Atlanta, GA.

The successful completion of this project has also led to several other collaborative projects involving MRSA, including two upcoming publications in our professional journal: (1) Rohde RE, McKenzie JF, Garcia SA, Patterson T. Prevalence and characterization of Staphylococci, including MRSA, in a student athletic facility, *Clin Lab Sci*, [In Press, Edu Supplement, Fall 2012] and, (2) Rohde RE, Rowder C, Patterson T, Redwine G, Vásquez B, Carranco E. Methicillin resistant *Staphylococcus aureus* (MRSA): an interim report of carriage and conversion rates in nursing students, *Clin Lab Sci* 2012;25 (2):94-101 (Spring printing presently in progress). Each of these projects have involved the inclusion and mentoring of several undergraduate TX State CLS students (of note, Garcia & McKenzie also had their work accepted for the 2011 ASCLS Undergraduate Research Poster competition).

Comment [Geo4]: We invite reports of all completed grants to be sent to Clin Lab Sci for publication.

The ASCLS E&R Grant and Scholarship program is an excellent opportunity for our members to acquire funds for research and furthering their education. I have been very fortunate and blessed to receive both an E&R grant and graduate scholarship to assist in my PhD education and research. I am, without a doubt, humbled by the financial support and confidence shown to me by the awards. I thank the committee and all associated with the ASCLS E&R Program for granting me this opportunity. I have also had the wonderful opportunity to be involved in the E&R as a judge this past year for the Kleiner award (CLS publication) at the invitation of Dan Southern. I am very grateful.

Comment [Geo5]: Grant availability depends on member contributions.

Sincerely,

Rodney E. Rohde, PhD, MS, SV, SM(ASCP)cm MBcm
Rodney E. Rohde
Associate Dean of Research, College of Health Professions &
Associate Professor, Clinical Laboratory Science
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Mechanisms and Laboratory Documentation of Adverse Events in Athletes with Sickle Cell Trait

ASCLS E&R Fund Member Grant Proposal

Background and Rationale

Sickle cell anemia was first discovered in **1910** by James B. Herrick, a physician practicing in Chicago, who described a 20-year-old black Caribbean dental student as having shortness of breath, palpitations, yellow eyes, and anemia.[1] Once the disease was characterized as a single gene mutation, homozygotes were described as having sickle cell disease (SCD) while heterozygotes were thought to simply be carriers and given the designation sickle cell trait (SCT). Much clinical information was collected regarding the symptoms, treatment, and prognosis of patients with SCD but it wasn't until the late 1970s and early 1980s that observations were published suggesting that individuals with SCT might better be classified as having a mild clinical condition.[2-5] These conversations quickly waned but have recently resurfaced in both the clinical area and on the athletic field. Clinical complications with a "definite" connection to SCT have been described as: renal medullary carcinoma, hematuria, renal papillary necrosis, hyposthenuria, and splenic infarction. Many other clinical issues that have "probable" associations with SCT include: complicated hyphema, venous thromboembolism, fetal loss, and low birth weight. Still other clinical conditions with a "weak" association with SCT are: acute chest syndrome, asymptomatic bacteremia in pregnancy, and proliferative retinopathy.[6,7] Recently, both the medical literature and the public news have reported cases of acute attacks and even sudden death in athletes associated with SCT.[8-11] The most recent reports in the medical literature have focused on certain physiological areas to include rhabdomyolysis,[8-10,12] venous thromboembolism[13-15], and renal complications.[16-18]

This study addresses the ASCLS E & R Fund by "demonstrating the value of laboratory services relating to the impact of test results in the diagnosis and treatment of patients" as well as "improving health by reducing disease incidence, morbidity and mortality." (See objectives)

Comment [Geo1]: Brief Hx of SS, straight to the point of the project.

Comment [Geo2]: Each specific claim is validated by citation.

Comment [Geo3]: Define unfamiliar terms.

Comment [Geo4]: These claims not validated by citation.

Comment [Geo5]: These two articles are reviews that support the prior two sentences.

Comment [Geo6]: Establishes timeliness and importance of the study.

Comment [Geo7]: Makes reference to stated purposes of the Member Grant program.

Objectives

This study seeks to identify laboratory test results that can predict the onset of an acute attack in athletes with SCT under extreme physiological stress during training and competition. In doing so it will provide athletic trainers and team physicians tools to make early diagnoses and treatment decisions like when to pull an athlete from the field, when to call 911, or when to reinstate a pulled athlete. Improved decision-making will reduce the morbidity and mortality of athletes with SCT and will inform potential mechanisms of acute attacks to guide the direction of future research.

Comment [Geo8]: Objective stated clearly in simple expository sentences, includes indication of its impact.

Methods/Design

Overview

Athletes from two universities (X and Y), representing two sports (basketball and soccer), involving both genders will be screened for SCT at their pre-athletic physical. All SCT athletes will be invited to be enrolled in the study (N is estimated at 5-10). An equal number of age and gender matched control subjects will be randomly selected and enrolled as follows: athletes from the same team who are homozygous normal (AA), non-athletes who are heterozygous for sickle cell (SCT).

Comment [Geo9]: Author obscures location when publishing results, however location is usually expressed in a proposal.

Comment [Geo10]: The small N is a weakness of the study. Most E&R Member Grants are pilot studies.

Comment [GF11]: This statement is unclear, does it mean two control arms, thus a total of 15-30 subjects? Answered in budget.

Athletic directors and team physicians at both universities have been contacted and have given verbal permission to participate in the study. Written statements of participation are available upon request.

Comment [Geo12]: All proposals now require Institutional Review Board approval, or application pending, citing no harm to subjects. Verbal agreement can be withdrawn.

Subjects

Team physicians will list all athletes testing as sickle cell heterozygotes (SCT) and each will be approached for inclusion in the study. A recruitment flyer and verbal announcement will be made available by the AT to each team in which a SCT athlete has agreed to participate in the study. Once the number of athletes with SCT has been identified, the same number of athletes who are negative for sickle cell (AA) will be recruited for the study. The heterozygous non-athletes with SCT will be recruited from the student population of X and Y by posting flyers asking for students known to have SCT to volunteer as research subjects. Each respondent will be questioned to match age and gender and to ensure they are not a student athlete, regular recreational athlete, or a regular

Comment [GF13]: Standard grammar, spelling, syntax, and logical progression. What may be a valid study could be sunk by misspellings, sloppy composition and editing.

Comment [Geo14]: But avoid passive sentences.

participant in intramural sports. Those who qualify and agree to participate will be tested to verify they have SCT. For each sport, the athletes will be tested at four defined intervals according to the following schedule:

1. Baseline measurements will be taken at rest during the mandatory pre-season physical.
    a. Electrolytes and serum protein are routinely performed but the tests below will need ordered:
        i. Microalbumin
        ii. Haptoglobin
        iii. D-dimer
        iv. Fibrinopeptides A and B
2. Measurements will be taken at the peak of the most difficult, early, pre-season practice session.
3. Measurements will be taken at the end of an early-season game in which the subject participated
4. Measurements will be taken at the end of a late-season game in which the subject participated

In addition, blood & urine will be collected in the event a subject is removed from practice or a game due to clinical evidence of a possible acute event.

Dependent Variables

Clinical measurements will be collected by the AT on duty (for measurements above 2-4).

1. Blood pressure
2. Pulse rate
3. Oxygen saturation by pulse oximetry
4. Eye exam for vision impairment or hyphema

Laboratory measurements for rhabdomyolysis

1. Complete urinalysis (PI)
    a. Blood (PI - dipstick and microscopic)
    b. Protein (PI - dipstick)
    c. Microalbumin (PI – lateral flow immunochromatography)
2. Haptoglobin (X hospital lab)

Laboratory measurements for hydration

1. Urine specific gravity (PI—refractometry)
2. Hematocrit (PI—microhematocrit)
3. Electrolytes (X hospital lab)
4. Serum total protein (X hospital lab)

Laboratory measurement for venous thromboembolism

1. D-dimer (X hospital lab)
2. Fibrin monomer (PI—hemagglutination)

Blood and urine samples will be collected at predefined times and will be immediately transported back to the research lab of the PI for testing and processing for send out testing to X hospital lab. All samples will be tested within 5 hours, refrigerated if tested in less than 24 hours, or frozen if testing cannot occur within 24 hours of collection.

Analysis Procedures

Complete urinalysis will be performed by the PI using standard methods and the microalbumin will be performed using a lateral flow immunochromatography system that detects the presence of microalbumin above a threshold of 20ug/mL. Fibrin monomer assay will be performed by the PI using hemagglutination. The detection of any fibrin monomers indicates increased blood clot formation. The PI manufactures and performs sickle cell screening in his research lab. Hemoglobin electrophoresis will be performed using the alkaline gel electrophoresis QuikGel system manufactured by Helena Laboratory. Procedures performed by X hospital lab will use existing procedures listed in the budget table.

As a pilot study, we anticipate the subject N to be below the number needed to perform parametric statistics. Therefore, a separate line graph will be used to plot mean values for each parameter with 95% CV error bars to compare the three groups (separate lines) at each of the four time intervals (baseline, practice, early game, late game).

Comment [Geo15]: The review committee will ask if the variables are appropriate to the purpose, state of the art, in regular use, and readily available.

Comment [Geo16]: Awkward syntax.

Comment [Geo17]: Principle investigator will have trouble finding Fp A and B, may not be feasible.

Comment [Geo18]: PI should provide limits, indicating what is defined as normal, abnormal.

Comment [Geo19]: Fibrin monomer may be difficult to find, PI should set limits to the number of variables that can be measured.

Comment [Geo20]: Provide specific specimen management and storage conditions. Frozen at what temperature, for instance.

Comment [GF21]: Statistics are appropriate to the small N. Reviewers check appropriateness of statistics.

Budget

The budget was calculated based on the following parameters:

1. Calculated based on 7 potential athletes with SCT
2. Equal number of AA athletes (7) and non-athletes with SCT (7) = 21 total subjects
3. 21 subjects x 4 testing time points = 84
4. Pre-season mandatory physical (7 AS athletes and 7 AA athletes) includes the following lab tests:
   i. Urine dipstick
   ii. CBC (includes hematocrit)
   iii. CMP (includes electrolytes, and total protein)
   iv. Sickle cell testing

Analyte	Manufacturer	Description	Cost/Unit	# of Units	Total
Microalbumin	Dialab GmbH	>20ug/mL	$100/25	3	$300
Dipsticks	Bayer	10 test strip	$60/100	1	$60
Specific gravity	N/A	Refractometer	N/A (on hand)	N/A	$0
Hematocrit	Ram (crit tubes)	Plane tubes	N/A (on hand)	N/A	$0
Sickle cell screen	Raw materials for kits	Solubility test	$30 each	7 (AA controls)	$210
Hb Electrophoresis	Helena Labs	Alk electrophoresis	$50 each	7 (AA controls)	$350
Fibrin Monomer	Stago	Hemagglutination	$10 each	84 (all subjects)	$840
Electrolytes	X hospital	Na, Cl, C02	$11 each	28 (AA controls)	$308
Haptoglobin	X hospital	Nephelometric	$20 each	84 (all subjects)	$1,680
Total protein	X hospital	Dye Binding	$6 each	28 (AA controls)	$168
D-dimer	X hospital	Quantitative	$16 each	84 (all subjects)	$1,344
Subjects who have an acute attack		Cost of all tests	$68/subject	2	$136
TOTAL					**$5,396**

Appendix #1

Investigators

Appendix #2

Responsibilities of each investigator

Principle Investigator:

1. Design study in collaboration with the co-investigators and write all associated documents
2. Coordinate activities among investigators
3. Write grant to fund laboratory assessment portion of the study
4. Write IRB and interact with IRB office
5. Conduct the laboratory portion of the study
   a. Blood and urine collection and analysis necessary to fulfill study design
   c. Other duties as deemed necessary
6. Perform analysis of the results in collaboration with the co-investigators
7. Write manuscript in collaboration with co-investigators (appear as first author)
8. Develop follow-up study in collaboration with co-investigators

Co-investigator (Athletic Trainer):

1. Work with PI in study design
2. Write accompanying grant to fund AT portion of the study
   a. Remuneration for subjects
   b. Other costs in accordance with study design funded by accompanying grant
3. Conduct and coordinate the AT portion of the study
   a. Ongoing contact and coordination with athletes
   b. Procurement, evaluation & implementation of AT procedures for SCT athletes at both colleges
   c. Collect BP, O_2 saturation, pulse rate, eye exam

Comment [Geo22]: The basis for the budget is made clear. Reviewers know budgets are best estimates.

Comment [Geo23]: Reviewers tend to deny payment of research subjects, though not strictly forbidden.

Comment [Geo24]: Grants are confined to purchase of instruments and materials not readily available in a research or a clinical laboratory.

Comment [Geo25]: Grants may pay for services but not for direct salary compensation or stipends.

Comment [GF26]: Names suppressed for purpose of public presentation.

Comment [GF27]: IRB conclusion is required before the grant is provided.

d. Document adverse events encountered with ALL athletes enrolled in the study

e. Other duties as deemed necessary

4. Work with PI to analyze data and write manuscript

Co-investigator (Physician):

1. Work with PI in study design
2. Write accompanying grant to fund physician portion of study
    a. Overlap with AT portion
    b. Additional clinical data collection at any intervention time point according to study design
    c. Other costs in accordance with study design
3. Conduct physician portion of the study
    a. Perform initial (baseline) exam on all enrolled subjects and document findings
        1) Perform current physician exam
        2) Additional physician findings according to study design of accompanying grant
    b. Work with AT to evaluate current AT and other clinical procedures
    c. Work with AT to evaluate and document all adverse events that occur with ALL study subjects
    d. Apply CURRENT policies and procedures to release inactivated athletes back to active status
    e. Perform clinical assessment at each intervention or other duties
4. Work with PI to analyze data and write manuscript

Appendix #3

References

1. Herrick JB. Peculiar elongated and sickle-shaped red blood corpuscles in a case of severe anemia. Arch Intern Med 1910;6:517–521.
2. Sears DA. The morbidity of sickle cell trait: a review of the literature. Am J Med 1978; 64:1021-1036.
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6. Tsaras G, Owusu-Ansah A, Boateng FO, et.al. Complications associated with sickle cell trait: a brief narrative review. Am J Med 2009;122:507-512.
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15. Westerman MP, Green D, Gilman-Sachs A, et.al. Coagulation changes in individuals with sickle cell trait. Am J Hematol 20002; 69:89-94.
16. Kiryluk K, Jadoon A, Gupta M, et.al. Sickle cell trait and gross hematuria. Kidney Int 2007;71:706-710.
17. Sesso R, Almeida MA, Figueiredo MS, et.al. Renal dysfunction in patients with sickle cell anemia or sickle cell trait. Braz J Med Biol Res 1998; 31:1257-1262.
18. Derebail VK, Nachman PH, Key NS, et.al. High prevalence of sickle cell trait in African Americans with ESRD. J Am Soc Nephrol 2010;21:413-417.

Comment [GF28]: References use correct Rutgers (NIH) format, do not use APA format. There is no room for creativity in reference citations. References appear in sequence as citations appear in text.

Comment [Geo29]: Always provide inclusive page numbers for easy reference. Reviewers check references for accuracy.