

List of Suggested Reviewers or Reviewers Not To Include (optional)

SUGGESTED REVIEWERS:

Not Listed

REVIEWERS NOT TO INCLUDE:

Not Listed

The following information regarding collaborators and other affiliations (COA) must be separately provided for each individual identified as senior project personnel. The COA information must be provided through use of this COA template.

Please complete this template (e.g., Excel, Google Sheets, LibreOffice), save as .xlsx or .xls, and upload directly as a Fastlane Collaborators and Other Affiliations single copy doc. Do not upload .pdf.

If there are more than 10 individuals designated as senior project personnel on the proposal, or if there are print preview issues, each completed template must be saved as a .txt file [select the Text (Tab Delimited) option] rather than as an .xlsx or .xls file. This format will still enable preservation of searchable text and avoid delays in processing and review of the proposal.

Please note that some information requested in prior versions of the PAPPG is no longer requested. **THIS IS PURPOSEFUL AND WE NO LONGER REQUIRE THIS INFORMATION TO BE REPORTED.** Certain relationships will be reported in other sections (i.e., the names of postdoctoral scholar sponsors should not be reported, however if the individual collaborated on research with their postdoctoral scholar sponsor, then they would be reported as a collaborator). The information in the tables is not required to be sorted, alphabetically or otherwise.

There are five separate categories of information which correspond to the five tables in the COA template:

COA template Table 1:

List the individual's last name, first name, middle initial, and organizational affiliation (including considered affiliation) in the last 12 months.

COA template Table 2:

List names as last name, first name, middle initial, for whom a personal, family, or business relationship would otherwise preclude their service as a reviewer.

COA template Table 3:

List names as last name, first name, middle initial, and provide organizational affiliations, if known, for the following:

- The individual's Ph.D. advisors; and
- All of the individual's Ph.D. thesis advisees.

COA template Table 4:

List names as last name, first name, middle initial, and provide organizational affiliations, if known, for the following:

- Co-authors on any book, article, report, abstract or paper with collaboration in the last 48 months (publication date may be later); and
- Collaborators on projects, such as funded grants, graduate research or others in the last 48 months.

COA template Table 5:

List editorial board, editor-in chief and co-editors with whom the individual interacts. An editor-in-chief must list the entire editorial board.

- Editorial Board: List name(s) of editor-in-chief and journal in the past 24 months; and
- Other co-Editors of journal or collections with whom the individual has directly interacted in the last 24 months.

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This information is used to manage reviewer selection. See Exhibit II-2 for additional information on potential reviewer conflicts.

- 1 Note that graduate advisors are no longer required to be reported.
- 2 Editorial Board does not include Editorial Advisory Board, International Advisory Board, Scientific Editorial Board, or any other subcategory of Editorial Board. It is limited to those individuals who perform editing duties or manage the editing process (i.e., editor in chief).

List names as Last Name, First Name, Middle Initial. Additionally, provide email, organization, and department
 Fixed column widths keep this sheet one page wide; if you cut and paste text, set font size at 10pt or smaller, and
 To insert *n* blank rows, select *n* row numbers to move down, right click, and choose Insert from the menu.
 You may fill-down (ctrl-D) to mark a sequence of collaborators, or copy affiliations. Excel has arrows that enable
 For "Last Active Date" and "Last Active" columns dates are optional, but will help NSF staff easily determine which
 information remains relevant for reviewer selection.
 "Last Active Date" and "Last Active" columns may be left blank for ongoing or current affiliations.

Table 1: List the individual’s last name, first name, middle initial, and organizational affiliation (including considered affiliation) in the last 12 months.

| 1 | Your Name: | Your Organizational Affiliation(s), last 12 | Last Active Date |
|---|-------------------|---|------------------|
| | Gurven, Michael M | University of California Santa Barbara | present |
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Table 2: List names as last name, first name, middle initial, for whom a personal, family, or business relationship would otherwise preclude their service as a reviewer.

R: Additional names for whom some relationship would otherwise preclude their service as a reviewer.

to disambiguate common names

| 2 | Name: | Organizational Affiliation | Optional (email, Department) | Last Active |
|---|-------|----------------------------|------------------------------|-------------|
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Table 3: List names as last name, first name, middle initial, and provide organizational affiliations, if known, for the following.

- G: The individual’s Ph.D. advisors; and
- T: All of the individual’s Ph.D. thesis advisees.

to disambiguate common names

| 3 | Advisor/Advisee Name: | Organizational Affiliation | Optional (email, Department) |
|---|-----------------------|----------------------------|------------------------------|
|---|-----------------------|----------------------------|------------------------------|

| | | | |
|----|-------------------------|--|--|
| G: | Hill, Kim | University of New Mexico | |
| T: | Anderson, Amy | University of California Santa Barbara | |
| T: | Alami, Sarah | University of California Santa Barbara | |
| T: | Schniter, Eric | Chapman University | |
| T: | von Rueden, Christopher | University of Richmond | |
| T: | Matera, Jaime | Cal State Channel Islands | |
| T: | Davis, Helen | University of New Mexico | |
| T: | Pisor, Anne | Washington State University | |
| T: | McAllister, Lisa | Pennsylvania State University | |
| T: | Garcia, Angela | Arizona State University | |
| T: | Martin, Melanie | University of Washington | |

Table 4: List names as last name, first name, middle initial, and provide organizational affiliations, if known, for the following:

A: Co-authors on any book, article, report, abstract or paper with collaboration in the last 48 months (publication date may be later); and

C: Collaborators on projects, such as funded grants, graduate research or others in the last 48 months.

to disambiguate common names

| 4 | Name: | Organizational Affiliation | Optional (email, Department) | Last Active |
|----|---------------------|--|------------------------------|-------------|
| A: | Trumble, Ben | Arizona State University | | |
| A: | Kaplan, Hillard | Chapman University | | |
| A: | Anderson, Amy | University of California Santa Barbara | | |
| A: | Blackwell, Aaron D | Washington State University Pullman | | |
| A: | Hunt, David | National Museum of Natural History, Smithsonian Institution | | |
| A: | Collins, Michael | National Institute of Dental and Craniofacial Research | | |
| A: | Folio, Les | National Institutes of Health Clinical Center | | |
| A: | Kraft, Thomas S | University of California Santa Barbara | | |
| A: | Hove, Carmen | University of California Santa Barbara | | |
| A: | Thompson, Randall C | Saint Luke's Mid America Heart Institute, University of Missouri-Kansas City | | |
| A: | Wann, Samuel L | Ascension Healthcare, Milwaukee | | |
| A: | Allam, Adel H | Al Azhar University, Cairo | | |
| A: | Frohlich, Bruno | National Museum of Natural History, Smithsonian Institution | | |
| A: | Sutherland, M Linda | Newport Diagnostic Center | | |
| A: | Sutherland, James D | South Coast Radiological Medical Group | | |
| A: | Stieglitz, Jonathan | Institute for Advanced Study in Toulouse | | |
| A: | Rodriguez, Daniel E | University de San Simón | | |
| A: | Irimia, Andrei | University of Southern California Leonard Davis School of Gerontology | | |
| A: | Law, Meng | Keck School of Medicine, University of Southern California | | |
| A: | Chui, Helena | Keck School of Medicine, University of Southern California | | |
| A: | Gatz, Margaret | University of Southern California Leonard Davis School of Gerontology | | |
| A: | Michalik, David E | University of California, Irvine | | |
| A: | Rowan, Chris J | Renown Institute for Heart and Vascular Health | | |
| A: | Lombardi, Guido P | Universidad Peruana Cayetano Heredia | | |
| A: | Bedi, Ram | University of Washington, Seattle | | |
| A: | Garcia, Angela R | Arizona State University | | |
| A: | Min, James K | Weill Cornell Medical College | | |
| A: | Narula, Jagat | Icahn School of Medicine at Mount Sinai | | |
| A: | Finch, Caleb E | University of Southern California Leonard Davis School of Gerontology | | |
| A: | Thomas, Gregory S | University of California, Irvine | | |
| A: | Martin, Melanie A | University of Washington, Seattle | | |
| A: | Cristia, Alejandria | PSL Research University | | |
| A: | Dupoux, Emmanuel | PSL Research University | | |
| A: | Klein, Laura D | Harvard University | | |

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|----|----------------------------|---|--|--|
| A: | Huang, jincui | University of California, Davis | | |
| A: | Quinn, Elizabeth A | Washington University, St. Louis | | |
| A: | Breakey, Alicia A | Harvard University | | |
| A: | Valeggia, Claudia | Yale University | | |
| A: | Scelza, Brooke | University of California, Los Angeles | | |
| A: | Venkataraman, Vivek V | Institute for Advanced Study in Toulouse | | |
| A: | Yegian, Andrew K | Harvard University | | |
| A: | Wallace, Ian J | Harvard University | | |
| A: | Holowka, Nicholas B | Harvard University | | |
| A: | Tacey, Ivan | University of Exeter | | |
| A: | Jaeggi, Adrian V | Institute of Evolutionary Medicine, Zurich | | |
| A: | Costa, Megan | Arizona State University | | |
| A: | Ross, Cody T | Santa Fe Institute | | |
| A: | Borgerhoff Mulder, Monique | University of California, Davis | | |
| A: | Oh, Seung-Yun | Korea Insurance Research Institute | | |
| A: | Bowles, Samuel | Santa Fe Institute | | |
| A: | Beheim, Bret | University of Nebraska, Lincoln | | |
| A: | Bunce, John | University of Utah | | |
| A: | Caudell, Mark | Washington State University, Pullman | | |
| A: | Clark, Gregory | University of California, Davis | | |
| A: | Colleran, Heidi | Max Planck Institute for the Science of Human History | | |
| A: | Cortez, Carmen | University of California, Davis | | |
| A: | Draper, Patricia | University of Nebraska, Lincoln | | |
| A: | Greaves, Russell D | University of Utah | | |
| A: | Headland, Thomas | University of Cincinnati | | |
| A: | Headland, Janet | SIL International | | |
| A: | Hewlett, Barry | Washington State University, Vancouver | | |
| A: | Hill, Kim | Arizona State University | | |
| A: | Koster, Jeremy | University of Cincinnati | | |
| A: | Kramer, Karen | University of Utah | | |
| A: | Marlowe, Frank | University of Cambridge | | |
| A: | McElreath, Richard | Max Planck Institute for Evolutionary Anthropology | | |
| A: | Nolin, David | University of Utah | | |
| A: | Quinlan, Marsha | Washington State University, Vancouver | | |
| A: | Quinlan, Robert | Washington State University, Vancouver | | |
| A: | Revilla-Minaya, Caissa | Vanderbilt University | | |
| A: | Schact, Ryan | University of Utah | | |
| A: | Shenk, Mary | Pennsylvania State University | | |
| A: | Uehara, Ray | SIL International | | |
| A: | Voland, Eckart | University of Giessen, Germany | | |
| A: | Willfuhr, Kai | University of Oldenburg, Germany | | |
| A: | Winterhalder, Bruce | University of California, Davis | | |
| A: | Ziker, John | Boise State University | | |
| A: | Jasienska, Grazyna | Jagiellonian University | | |
| A: | Yetish, Gandhi | University of California, Los Angeles | | |
| A: | Schwartz, Matthew | University of New Mexico | | |
| A: | Seabright, Edmond | University of New Mexico | | |
| A: | Cummings, Daniel | University of New Mexico | | |
| A: | Schniter, Eric | Chapman University | | |
| A: | Wilcox, Nathaniel T | Chapman University | | |
| A: | Pisor, Anne | Washington State University, Pullman | | |
| A: | van der Linden, Dimitri | Erasmus University | | |
| A: | Dunkel, Curtis S | Western Illinois University | | |

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|----|----------------------------|--|--|---------|
| A: | Figueredo, Aurelio Jose | University of Arizona | | |
| A: | Woodley of Menie, Michael | Vrije Universiteit Brussel | | |
| A: | Gomes, Cristina M | Tropical Conservation Institute | | |
| A: | Hooper, Paul | Santa Fe Institute | | |
| A: | Caldwell, Ann E | University of Colorado | | |
| A: | Lancaster, Jane B | University of New Mexico | | |
| A: | Hodges-Simeon, Carolyn R | Boston University | | |
| A: | Richardson, George B | University of Cincinnati | | |
| A: | Hanson Sobraske, Katherine | University of California, Santa Barbara | | 6/30/08 |
| A: | Samore, Theodor | University of California, Los Angeles | | |
| A: | Gaulin, Steven JC | University of California, Santa Barbara | | |
| A: | Lukaszewski, Aaron W | California State University, Fullerton | | |
| A: | Schmitt, David P | Bradley University | | |
| A: | Prall, Sean P | University of California, Los Angeles | | |
| A: | Sobolewski, Marissa | University of Rochester | | |
| A: | Weiss, Bernard | University of Rochester | | |
| A: | Barrett, Emily | University of Rochester | | |
| A: | Hames, Raymond | University of Nebraska, Lincoln | | |
| A: | Kiely, Evan J | Emory University | | |
| A: | Allayee, Hooman | University of Southern California, Los Angeles | | |
| A: | Hopfensitz, Astrid | Toulouse School of Economics | | |
| A: | Han, Cliff S | Los Alamos National Laboratory | | |
| A: | Dichosa, Armand EK | Los Alamos National Laboratory | | |
| A: | Daughton, Ashlynn R | Los Alamos National Laboratory | | |
| A: | Frietze, Seth | University of Vermont | | |
| A: | Alcock, Joe | University of New Mexico | | |
| A: | Emery Thompson, Melissa | University of New Mexico | | |
| A: | Maldonado Suarez, Ivan | Tsimane Health and Life History Project | | |
| A: | Horvath, Steve | University of California, Los Angeles | | |
| A: | Levine, Morgan E | University of California, Los Angeles | | |
| A: | Ritz, Beate R | University of California, Los Angeles | | |
| A: | Chen, Brian | National Institute on Aging | | |
| A: | Lu, Ake T | University of California, Los Angeles | | |
| A: | Rickabaugh, Tammy M | University of California, Los Angeles | | |
| A: | Jamieson, Beth D | University of California, Los Angeles | | |
| A: | Sun, Dianjianyi | Tulane University | | |
| A: | Li, Shengxu | Tulane University | | |
| A: | Chen, Wei | Tulane University | | |
| A: | Quintana-Murci, Lluís | Centre National de la Recherche Scientifique | | |
| A: | Kobor, Michael S | University of British Columbia, Vancouver | | |
| A: | Tsao, Philip S | Stanford University | | |
| A: | Reiner, Alexander P | University of Washington, Seattle | | |
| A: | Edlefsen, Kerstin L | University of Washington, Seattle | | |
| A: | Absher, Devin | HudsonAlpha Institute for Biotechnology | | |
| A: | Assimes, Themistocles L | Stanford University | | |
| A: | Madimenos, Felicia | Queens College - City University of New York | | |
| A: | Barrett, H C | University of California, Los Angeles | | |
| A: | Bolyanatz, Alexander | College of DuPage | | |
| A: | Crittenden, Alyssa N | University of Nevada, Las Vegas | | |
| A: | Fessler, Daniel M T | University of California, Los Angeles | | |
| A: | Fitzpatrick, Simon | John Carroll University | | |
| A: | Henrich, Joseph | Harvard University | | |
| A: | Kanovsky, Martin | Comenius University | | |

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|----|------------------------|--|--|--|
| A: | Kushnick, Geoff | The Australian National University, Canberra | | |
| A: | Stich, Stephen | Rutgers University | | |
| A: | Zhao, Wanying | University of British Columbia, Vancouver | | |
| A: | Laurence, Stephen | University of Sheffield | | |
| A: | Boose, Klaree J | University of Oregon | | |
| A: | White, Frances J | University of Oregon | | |
| A: | Dunbar, Matt D | University of Washington, Seattle | | |
| A: | Tamayo, Marilynne A | University of Missouri, Columbia | | |
| A: | Demps, Kathryn | Boise State University | | |
| A: | Gerkey, Drew | Oregon State University | | |
| A: | Wood, Brian | Yale University | | |
| A: | Pontzer, Herman | Hunter College | | |
| A: | Manger, Paul R | University of the Witwatersrand | | |
| A: | Wilson, Charles | University of California, Los Angeles | | |
| A: | McGregor, Ronald | University of California, Los Angeles | | |
| A: | Siegel, Jerome | University of California, Los Angeles | | |
| A: | Holbrook, Colin | University of California, Los Angeles | | |
| A: | Gervais, Matthew M | University of California, Los Angeles | | |
| A: | Cortez Linares, Edhitt | Tsimane Health and Life History Project | | |
| A: | Fagny, Maud | Dana-Farber Cancer Institute | | |
| A: | Dinkel, Katelyn A | Arizona State University | | |

chief must list the entire editorial board.

B: Editorial Board: List name(s) of editor-in-chief and journal in the past 24 months; and

E: Other co-Editors of journal or collections with whom the individual has directly interacted in the last 24 months.

to disambiguate common names

| 5 | Name: | Organizational Affiliation | Journal/Collection | Last Active |
|----|--------------------------|--|---|-------------|
| B: | Berenbaum, May R | University of Illinois at Urbana-Champaign | Proceedings of the National Academy of Sciences | |
| B: | Kamilar, Jason | University of Massachusetts | Evolutionary Anthropology | |
| B: | Kochenderfer-Ladd, Betsy | Arizona State University | Developmental Psychology | |
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COA template Table 1:

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- All of the individual's Ph.D. thesis advisees.

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COA template Table 5:

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You may fill-down (ctrl-D) to mark a sequence of collaborators, or copy affiliations. Excel has arrows that enable sorting. For "Last Active Date" and "Last Active" columns dates are optional, but will help NSF staff easily determine which information remains relevant for reviewer selection.

“Last Active Date” and “Last Active” columns may be left blank for ongoing or current affiliations.

| 1 | Your Name: | Your Organizational Affiliation(s), last 12 | Last Active Date |
|---|------------------------|---|------------------|
| | Alami Gouraftei, Sarah | University of California, Santa Barbara | present |
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to disambiguate common names

| 2 | Name: | Organizational Affiliation | Optional (email, Department) | Last Active |
|---|-------|----------------------------|------------------------------|-------------|
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T: All of the individual's Ph.D. thesis advisees.

to disambiguate common names

[illegible]

Table 4: List names as last name, first name, middle initial, and provide organizational affiliations, if known, for the following:

A: Co-authors on any book, article, report, abstract or paper with collaboration in the last 48 months (publication date may be later); and

C: Collaborators on projects, such as funded grants, graduate research or others in the last 48 months.

to disambiguate common names

| 4 | Name: | Organizational Affiliation | Optional (email, Department) | Last Active |
|----|-------------------------|---|--|-------------|
| A: | Gurven, Michael D | University of California, Santa Barbara | Department of Anthropology | |
| A: | von Rueden, Christopher | University of Richmond, Virginia | Jepson School of Leadership Studies | |
| A: | Stieglitz, Jonathan | Institute for Advanced Studies in Toulouse, France | | |
| A: | Kaplan, Hillard | Chapman University | Economic Science Institute | |
| A: | Seabright, Edmond T R | University of New Mexico | Department of Anthropology | |
| A: | Kraft, Thomas S | University of California, Santa Barbara | Department of Anthropology | |
| A: | Blackwell, Aaron D | Washington State University | Department of Anthropology | |
| A: | Sznycer, D | University of Montreal | Department of Psychology | |
| A: | Koster, J. M | University of Cincinnati | Department of Anthropology | |
| A: | Tooby, J | University of California, Santa Barbara | Department of Anthropology | |
| A: | Cosmides, L | University of California, Santa Barbara | Department of Anthropology | |
| C: | Lawson, D | University of California, Santa Barbara | Department of Anthropology | |
| C: | Pisor, A C | Washington State University | Department of Anthropology | |
| C: | Beheim, Bret | Max Plank Institute for Evolutionary Anthropology, Leipzig, Germany | | |
| C: | Trumble, B | Arizona State University | School of Human Evolution and Social Change | |
| A: | Irimia, Andrei | University of Southern California | Leonard Davis School of Gerontology | |
| A: | Copajira, Juan A | Tsimane Health and Life History Project, Bolivia | | |
| A: | Maher, Alexander S | University of Southern California | Leonard Davis School of Gerontology | |
| A: | Rostowsky, Kenneth A | University of Southern California | Leonard Davis School of Gerontology | |
| A: | Chowdury, Nahian F | University of Southern California | Leonard Davis School of Gerontology | |
| A: | Sutherland, Linda | Newport Diagnostic Center, Newport Beach, CA | | |
| A: | Sutherland, James D | Coast Radiological Medical Group, Laguna Hills, CA | | |
| A: | Allam, Adel H | Al Azhar University, Cairo, Egypt | | |
| A: | Eid Rodriguez, Daniel | Tsimane Health and Life History Project, Bolivia | | |
| A: | Cummings, Daniel | University of New Mexico | Department of Anthropology | |
| A: | Garcia, Angela R | Arizona State University | School of Human Evolution and Social Change | |
| A: | Rowan, Christopher | Renown Institute for Heart and Vascular Health | | |
| A: | Miyamoto, Michael | Mission Heritage Medical Group, Mission Viejo, CA | | |
| A: | Barisano, Giuseppe | University of Southern California | Department of Neurology | |
| A: | Mack, William | University of Southern California | Department of Neurology | |
| A: | Law, Meng | University of Southern California | Department of Neurology | |
| A: | Finch, Caleb | University of Southern California | Leonard Davis School of Gerontology | |
| A: | Xygalatas, Dimitri | University of Connecticut | Department of Anthropology and Cognitive Science | Pr |
| A: | An, Xiao-Fen | East China Normal University, Shanghai, China | School of Psychology and Cognitive Science | |
| A: | Ananyeva, Kristina I | Russian Academy of Sciences, Moscow, Russia | Institute of Psychology | |
| A: | Fukushima, Shirito | Aoyama Gakuin University, Tokyo, Japan | School of Cultural and Creative Studies | |
| A: | Hitokoto, Hidefumi | Fukuoka University, Dazaifu, Japan | Department of Humanities | |
| A: | Kharitonov, Alexander N | Russian Academy of Sciences, Moscow, Russia | Institute of Psychology | |
| A: | Onyishi, Charity N | University of Nigeria, Nsukka, Nigeria | Department of Sociology and Anthropology | |
| A: | Romero, Pedro P | Universidad San Francisco de Quito, Pichincha, Ecuador | Department of Economics | |
| A: | Takemura, Kosuke | Shiga University, Japan | Faculty of Economics | |
| A: | Zhuang, Jin-Ying | East China Normal University, Shanghai, China | School of Psychology and Cognitive Science | |
| A: | Agey, Elizabeth | University of California, Santa Barbara | Department of Anthropology | |
| A: | Atkinson, Quentin D | University of Auckland | Department of Psychology | |
| A: | Conte, Thomas | Rutgers University, New Brunswick, NJ | Department of Anthropology | |
| A: | Flores, Carlos | Universidad Católica del Norte, Coquimbo, Chile | Facultad de Ciencias del Mar | |
| A: | Onyishi, Ike E | University of Nigeria, Nsukka, Nigeria | Department of Psychology | |

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chief must list the entire editorial board.

B: Editorial Board: List name(s) of editor-in-chief and journal in the past 24 months; and

E: Other co-Editors of journal or collections with whom the individual has directly interacted in the last 24 months.

to disambiguate common names

| 5 | Name: | Organizational Affiliation | Journal/Collection | Last Active |
|----|-------------------------|----------------------------|------------------------------------|-------------|
| E: | Brosnan, Sarah | Georgia State University | Proceedings of the Royal Society B | |
| E: | Panter-Brick, Catherine | Yale University | Social Science & Medicine | |
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COVER SHEET FOR PROPOSAL TO THE NATIONAL SCIENCE FOUNDATION

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| PROGRAM ANNOUNCEMENT/SOLICITATION NO./DUE DATE NSF 19-560 01/15/20 | | <input type="checkbox"/> Special Exception to Deadline Date Policy | | FOR NSF USE ONLY NSF PROPOSAL NUMBER | |
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| AWARDEE ORGANIZATION CODE (IF KNOWN) 0013201000 | | | | | |
| NAME OF PRIMARY PLACE OF PERF University of California-Santa Barbara | | ADDRESS OF PRIMARY PLACE OF PERF, INCLUDING 9 digit zip code University of California-Santa Barbara Santa Barbara ,CA ,931062050 ,US. | | | |
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| TITLE OF PROPOSED PROJECT Doctoral Dissertation Research: Drivers and consequences of intermarriage on social networks and risk-buffering in rural Bolivia | | | | | |
| REQUESTED AMOUNT \$ 25,200 | PROPOSED DURATION (1-60 MONTHS) 14 months | REQUESTED STARTING DATE 06/01/20 | SHOW RELATED PRELIMINARY PROPOSAL NO. IF APPLICABLE | | |
| THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW <input type="checkbox"/> BEGINNING INVESTIGATOR <input checked="" type="checkbox"/> HUMAN SUBJECTS Human Subjects Assurance Number FWA00006361 <input type="checkbox"/> DISCLOSURE OF LOBBYING ACTIVITIES Exemption Subsection _____ or IRB App. Date 10/08/19 <input type="checkbox"/> PROPRIETARY & PRIVILEGED INFORMATION <input type="checkbox"/> FUNDING OF INT'L BRANCH CAMPUS OF U.S IHE <input type="checkbox"/> FUNDING OF FOREIGN ORG <input type="checkbox"/> HISTORIC PLACES <input checked="" type="checkbox"/> INTERNATIONAL ACTIVITIES: COUNTRY/COUNTRIES INVOLVED BL <input type="checkbox"/> VERTEBRATE ANIMALS IACUC App. Date _____ PHS Animal Welfare Assurance Number _____ <input checked="" type="checkbox"/> TYPE OF PROPOSAL Research <input checked="" type="checkbox"/> COLLABORATIVE STATUS Not a collaborative proposal | | | | | |
| PI/PD DEPARTMENT Anthropology | | PI/PD POSTAL ADDRESS HSSB bldg, room 2059 Santa Barbara,CA 93106 United States | | | |
| PI/PD FAX NUMBER 805-893-8707 | | | | | |
| NAMES (TYPED) | High Degree | Yr of Degree | Telephone Number | Email Address | |
| PI/PD NAME Michael D Gurven | PhD | 2000 | 805-893-2257 | gurven@anth.ucsb.edu | |
| CO-PI/PD Sarah Alami Gouraftei | MA | 2018 | 619-994-4468 | sarah00@ucsb.edu | |
| CO-PI/PD | | | | | |
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CERTIFICATION PAGE

Certification for Authorized Organizational Representative (or Equivalent) or Individual Applicant

By electronically signing and submitting this proposal, the Authorized Organizational Representative (AOR) or Individual Applicant is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding conflict of interest (when applicable), drug-free workplace, debarment and suspension, lobbying activities (see below), nondiscrimination, flood hazard insurance (when applicable), responsible conduct of research, organizational support, Federal tax obligations, unpaid Federal tax liability, and criminal convictions as set forth in the NSF Proposal & Award Policies & Procedures Guide (PAPPG). Willful provision of false information in this application and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S. Code, Title 18, Section 1001).

Certification Regarding Conflict of Interest

The AOR is required to complete certifications stating that the organization has implemented and is enforcing a written policy on conflicts of interest (COI), consistent with the provisions of PAPPG Chapter IX.A.; that, to the best of his/her knowledge, all financial disclosures required by the conflict of interest policy were made; and that conflicts of interest, if any, were, or prior to the organization's expenditure of any funds under the award, will be, satisfactorily managed, reduced or eliminated in accordance with the organization's conflict of interest policy. Conflicts that cannot be satisfactorily managed, reduced or eliminated and research that proceeds without the imposition of conditions or restrictions when a conflict of interest exists, must be disclosed to NSF via use of the Notifications and Requests Module in FastLane.

Drug Free Work Place Certification

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent), is providing the Drug Free Work Place Certification contained in Exhibit II-3 of the Proposal & Award Policies & Procedures Guide.

Debarment and Suspension Certification

(If answer "yes", please provide explanation.)

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency?

Yes ☐

No ☒

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) or Individual Applicant is providing the Debarment and Suspension Certification contained in Exhibit II-4 of the Proposal & Award Policies & Procedures Guide.

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding \$100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Certification Regarding Nondiscrimination

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is providing the Certification Regarding Nondiscrimination contained in Exhibit II-6 of the Proposal & Award Policies & Procedures Guide.

Certification Regarding Flood Hazard Insurance

Two sections of the National Flood Insurance Act of 1968 (42 USC §4012a and §4106) bar Federal agencies from giving financial assistance for acquisition or construction purposes in any area identified by the Federal Emergency Management Agency (FEMA) as having special flood hazards unless the:

- (1) community in which that area is located participates in the national flood insurance program; and
- (2) building (and any related equipment) is covered by adequate flood insurance.

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) or Individual Applicant located in FEMA-designated special flood hazard areas is certifying that adequate flood insurance has been or will be obtained in the following situations:

- (1) for NSF grants for the construction of a building or facility, regardless of the dollar amount of the grant; and
- (2) for other NSF grants when more than \$25,000 has been budgeted in the proposal for repair, alteration or improvement (construction) of a building or facility.

Certification Regarding Responsible Conduct of Research (RCR)

(This certification is not applicable to proposals for conferences, symposia, and workshops.)

By electronically signing the Certification Pages, the Authorized Organizational Representative is certifying that, in accordance with the NSF Proposal & Award Policies & Procedures Guide, Chapter IX.B., the institution has a plan in place to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduates, graduate students and postdoctoral researchers who will be supported by NSF to conduct research. The AOR shall require that the language of this certification be included in any award documents for all subawards at all tiers.

CERTIFICATION PAGE - CONTINUED**Certification Regarding Organizational Support**

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that there is organizational support for the proposal as required by Section 526 of the America COMPETES Reauthorization Act of 2010. This support extends to the portion of the proposal developed to satisfy the Broader Impacts Review Criterion as well as the Intellectual Merit Review Criterion, and any additional review criteria specified in the solicitation. Organizational support will be made available, as described in the proposal, in order to address the broader impacts and intellectual merit activities to be undertaken.

Certification Regarding Federal Tax Obligations

When the proposal exceeds \$5,000,000, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal tax obligations. By electronically signing the Certification pages, the Authorized Organizational Representative is certifying that, to the best of their knowledge and belief, the proposing organization:

- (1) has filed all Federal tax returns required during the three years preceding this certification;
- (2) has not been convicted of a criminal offense under the Internal Revenue Code of 1986; and
- (3) has not, more than 90 days prior to this certification, been notified of any unpaid Federal tax assessment for which the liability remains unsatisfied, unless the assessment is the subject of an installment agreement or offer in compromise that has been approved by the Internal Revenue Service and is not in default, or the assessment is the subject of a non-frivolous administrative or judicial proceeding.

Certification Regarding Unpaid Federal Tax Liability

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal Tax Liability:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has no unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

Certification Regarding Criminal Convictions

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Criminal Convictions:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has not been convicted of a felony criminal violation under any Federal law within the 24 months preceding the date on which the certification is signed.

Certification Dual Use Research of Concern

By electronically signing the certification pages, the Authorized Organizational Representative is certifying that the organization will be or is in compliance with all aspects of the United States Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern.

| | | | | |
|--|---|-----------|------------|------|
| AUTHORIZED ORGANIZATIONAL REPRESENTATIVE | | SIGNATURE | | DATE |
| NAME Reese Raffo | | | | |
| TELEPHONE NUMBER 805-893-2041 | EMAIL ADDRESS raffo@research.ucsb.edu | | FAX NUMBER | |
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PROJECT SUMMARY

Overview:

Contemporary societies are often made up of individuals from numerous ethnic and religious backgrounds. Dealing with such diversity is at the forefront of the political debate worldwide, and a central theme of social science research. Intermarriage between individuals from different ethnic, racial or religious groups is commonly used as an indicator of social mobility, minority integration, and social cohesion in the social sciences literature. The proposed project investigates what drives marriage between individuals of different ethnicities, and the impacts intermarriage has on social support networks and resilience in the face of environmental variability. This research will take place in two multiethnic villages in the Alto Beni region of Bolivia. Research questions will mainly be addressed using semi-structured interviews with a full sample of adults in both villages. Data will include demographic information on household members as well as their marriage histories, social networks, wealth and sources of income, perceived intergenerational mobility, and tolerance and trust of individuals from different ethnicities. Since 2016, the region has been affected by an epidemic of crop failure due to disease, which provides a naturalistic setting to study whether intermarried couples are able to buffer risk and unpredictable shortfalls differently from their co-ethnically married peers.

Intellectual Merit:

The present project addresses theoretical issues in anthropology concerning the drivers of mate choice preferences, the functions of marriage and the evolution of kinship systems. There is little empirical research on cultural and ethnic identity as a feature of mate preference outside of the psychological literature, which generally does not consider the constraints of marriage markets in non-industrialized settings. This research will test a long-standing idea in anthropology, which posits that a primary function of marriage is to create social ties between different groups. To do so, social network analysis will be used to examine whether intermarriage connects not only spouses, but the social networks to which they belong as well. Guided by the theories and methods of human behavioral ecology, we aim to develop a framework for assessing individual mating preferences, the social norms and socioeconomic constraints which guide these preferences, and pursue the goal of understanding how marriage patterns respond to socio-ecology.

A deeper understanding of the drivers of intermarriage should be of value to researchers across social and life science disciplines interested in social cohesion and integration (sociology, political science), migration (geography, economics), cultural evolution (anthropology, biology), and the diffusion of genes and culture between societies throughout human history.

Broader Impacts:

The proposed project will examine how marriage between individuals of different ethnicities and cultures can broaden social networks and lead to greater intergroup cooperation. Our results may have considerable relevance for policy makers, and development projects requiring cross-cultural collaboration. The issue of intermarriage is of particular relevance for Bolivia, one of the most ethnically diverse countries in Latin America, where social inclusion of indigenous populations is a major social and political issue, and where cross-cultural cooperation is critical for access to limited municipal and national funds. This research will also identify coping mechanisms and risk-buffering strategies related to crop failure, a common problem faced by rural households in developing countries and an ongoing issue in the communities of study. This project will be conducted in collaboration with the Tsimane Health and Life History Project, which provides free medical care to indigenous communities in Bolivia. The funds requested will support the doctoral training of a minority female graduate student, and employ three Bolivian research assistants who will be trained in data collection, data entry, and computer skills valuable for future employment.

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| Current and Pending Support | 2 | _____ |
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*Proposers may select any numbering mechanism for the proposal. The entire proposal however, must be paginated. Complete both columns only if the proposal is numbered consecutively.

Doctoral Dissertation Research: Drivers and consequences of intermarriage on social networks and risk-buffering in rural Bolivia

STATEMENT OF THE PROBLEM

Contemporary societies are often made up of individuals from diverse ethnic, religious and cultural backgrounds. Harnessing the advantages of such diversity while minimizing conflict is at the forefront of political debates worldwide, and a central theme of social science research. Intermarriage between individuals from different ethnic, racial or religious groups is often used as an indicator of social mobility and minority integration into mainstream society (For a review, see Alba and Nee, 2003; Rodríguez-García, 2015). For example, immigrants who intermarry with native-born citizens have been found to have higher levels of employment and higher wages in the United States (Furtado and Theodoropoulos, 2009, 2010) and Western Europe (Meng and Gregory, 2005; Meng and Meurs, 2009; Dribe and Nystedt, 2015). High rates of intermarriage are also believed to indicate greater intergroup tolerance (Alba and Nee, 2003; Qian and Lichter, 2007), and the presence of intermarried couples and children with a multicultural heritage may reduce the rigidity of group boundaries reproduced through family systems (Alba, 2009; Smits, 2010). Though improved community social integration may be a positive effect of intermarriage, for the individuals involved, intermarriage comes with serious risks. These include cultural incompatibility between spouses (Kalmijn, de Graaf and Janssen, 2005; Smith, Maas and van Tubergen, 2012), alienation and rejection by in-laws or peers (Bratter and Eschbach, 2006; De Miguel Luken *et al.*, 2015), power imbalances within the couple that may result in greater risk of spousal abuse (Nemoto, 2006; Kusel, 2014), and cultural erosion, such as the loss of a sense of cultural identity and/or the loss of one's native language in subsequent generations (De Klerk, 2001; Alba and Islam, 2009; Kim *et al.*, 2017). Another potential obstacle for intermarriage is the substantial evidence demonstrating strong preference for homogamy – the tendency to choose marriage partners who are similar to us in culturally important ways (Kalmijn, 1994; Bereczkei *et al.*, 2002; Schwartz, 2013) – and divorce rates tend to be higher for couples of different races, ethnicities or religions (Lehrer and Chiswick, 1993; Kalmijn, de Graaf and Janssen, 2005; Bratter and King, 2008). Given cross-cultural evidence for homogamy and the perceived obstacles to intermarriage, what factors best predict intermarriage in multicultural societies?

The goal of this research is to test hypotheses derived from anthropological and sociological theory, which predict both the drivers of intermarriage and how socio-ecology can affect individual preferences and favor social norms encouraging or opposing marriage between groups. While expanding one's marriage pool may be necessary if there are limited suitable partners within one's group, intermarriage can also be preferred if it provides access to otherwise inaccessible mate qualities, material resources and other opportunities. By connecting spouses from different groups, intermarriage may also expand an individual's social networks, cultural capital and political power, which in turn, can lead to a greater capacity for adaptation to unpredictable or rapidly changing socioeconomic and/or environmental conditions. As such, intermarriage may help individuals mitigate shortfalls during times of hardship (e.g. Lee, 1984; Rosenzweig, 1989; Wiessner, 2002). This study tests hypotheses about exogamous marriage between individuals from different ethnic groups (hereafter "intermarriage") in two multiethnic villages in the Alto Beni region of Bolivia. My research proposes the following questions:

- (1) Under what circumstances is intermarriage a desirable outcome as opposed to a fallback strategy?***
- (2) Does intermarriage connect not only the spouses but also the social networks to which they belong?***
- (3) Does intermarriage buffer against shortfalls, and if so, is it due to broader social networks and/or more diversified production and risk-buffering strategies?***

The two adjacent villages of Santa Ana de Mosetenes (hereafter Santa Ana) and Puerto Santa Ana (hereafter Puerto) are ideal places for conducting a study on intermarriage. The primary ethnic marker there is cultural identity (*identidad cultural*), which includes non-indigenous descendants of Europeans, as well as 36 nationally recognized *pueblos indígenas* (indigenous groups) in Bolivia. As a result, there are many opportunities for friendly, antagonistic or indifferent relations between individuals of different ethnicities. Despite the variety of ethnic groups, almost everybody in these villages speak Spanish as a first or second language and practices Catholicism. Therefore, I am able to study the role that ethnicity

plays in determining marital preferences without the confounding effects of linguistic or religious barriers. Similarly, there are no institutional barriers to intermarriage, such as anti-miscegenation laws, and villagers of different ethnicities share the same public spaces including an elementary and secondary school and a health center; and they all participate to a similar degree in the political life of their community. Although residents of Santa Ana and Puerto are primarily horticulturalists, resource access and subsistence strategies vary between ethnic groups. Thus, the study setting allows me to test whether intermarriage can serve to diversify the production strategies of couples. The group native to the region (Moseten) has preferential access to arable land, while most groups who have migrated from other parts of Bolivia are more likely to engage in other economic activities (e.g. running shops, driving taxis), and have a higher degree of participation in the market economy. Finally, residents of Santa Ana and Puerto are currently facing a rare but virulent papaya disease that has destroyed much of their most important cash crop. This catastrophe acts as a natural experiment, which will allow me to examine whether intermarriage helps buffer risk. All of the above will be discussed further in the study location section.

The proposed project explores the most intimate realm of interethnic relations, marriage, in one of the most diverse regions of Bolivia, where interethnic cooperation is crucial to economic and political success (Von Stosch, 2014; Pisor, 2016). Bolivia itself is an ideal place to study intermarriage. In November 2019, Bolivian president Evo Morales resigned after nearly fourteen years in power, a period that experienced an economic boom, a sizable reduction in poverty, and visible strides in social equality for indigenous people. The identity of the country as a multinational state (*estado plurinacional*) in 2009 gave formal recognition to the multicultural background of its largely indigenous population, and the intent to thrive together, after a long history of conflict, racism, and inequality (Klein, 2011). Morales' controversial resignation along with the subsequent actions and statements of the Añez interim government have led to concerns about renewed ethnic tensions.

I will address my research questions using semi-structured interviews, social network analysis and participant observation. Fieldwork will be conducted over two field seasons, in the course of twelve months in Santa Ana and Puerto. Resulting analyses will shed light on drivers of intermarriage in these communities amid a landscape of rapid political and socioeconomic development, which will help forecast future demographic and cultural change in the region. My research will also assess the consequences of intermarriage on social networks, and the role of intermarriage in mitigating shortfalls caused by crop failure, which may reveal drivers of economic inequality and highlight how institutional action can help vulnerable families in times of crisis.

LITERATURE REVIEW, HYPOTHESES AND PREDICTIONS

Exogamy [and endogamy] – the practice of marrying outside [vs. inside] one's natal group (McLennan, 1865; Durkheim, 1912)– is an important dimension of marriage systems. It fundamentally alters kinship networks, and is a crucial determinant of relatedness within groups as well as cultural and genetic exchange between populations (Bailey, Hill and Walker, 2014; Brown, 2016; Salali *et al.*, 2016; Knipper *et al.*, 2017). In the 19th century, exogamy was viewed primarily as a result of the scarcity of mates in small-scale societies (McLennan, 1865), a way to forge and maintain bridging relationship between different groups (Tylor, 1888), or as an instinctive aversion and a means for avoiding marriage between close kin (Morgan, 1871; Westermarck, 1934). In the early to mid 20th century, academic interest in exogamy was extended to intermarriage between individuals from different ethnic, religious and racial groups, motivated by the question of whether minorities would assimilate to the dominant group, or integrate with one another, in countries with high levels of immigration and a history of slavery such as the United States (e.g. Drachsler, 1920; Kennedy, 1944) and Brazil (Telles, 2004; Arteaga, 2017). For example, in his essay on *Assimilation in American Life* (Gordon, 1964), Milton Gordon noted how early migrants from Southern and Eastern Europe, who faced a great deal of discrimination when they first arrived to the United States in the early 20th century, had assimilated into the already established white ethnic majority three generations later, and argued this assimilation was both a cause and a consequence of widespread intermarriage. Intermarriage rates remain a commonly used barometer of socioeconomic integration and social cohesion (Kalmijn, 1998; Alba and Nee, 2003; Bazzi *et al.*, 2019), although the

validity of this assumption has come to question, with researchers increasingly holding that intermarriage may rather reflect existing stereotypes and power imbalances within a society (see Rodríguez-García, 2015 for a review). For example, gender imbalances in the composition of intermarried couples may sometimes result from the exoticization of certain minorities (Kempadoo, 2004; Lee, 2004).

Much research has shown that humans tend to prefer homogamy in choice of marital partner, particularly for markers of group identification such as religion, race and ethnicity (Kalmijn, 1994; Bereczkei *et al.*, 2002; Schwartz, 2013). Intermarriage is becoming increasingly common in many regions of the world (Waters and Alba, 2010; Wang, 2012; Crespín-Boucaud, 2020), however, suggesting that it is at least partly driven by external political, cultural or socioeconomic factors. This increase has generally been attributed to urbanization, globalization and migration both between and within countries (Mai and King, 2009; Brettell, 2017), to greater liberalization of attitudes towards ethnic and religious minorities in most WEIRD (Western, Educated, Industrialized, Rich and Democratic) countries (Henrich, Heine and Norenzayan, 2010), and to the rise of online dating as a primary means of meeting prospective partners (Ortega and Hergovich, 2018). However, attempts to empirically research the drivers of intermarriage in smaller-scale societies remain scarce. This research tests four hypotheses derived from anthropological and sociological theory, which predict the drivers of intermarriage, as well as how intermarriage can impact social networks and resilience to shocks among small-scale horticulturalists undergoing rapid socioeconomic and political development.

Hypothesis 1: Resource or mate quality drives intermarriage. When selecting a marriage partner, an individual's preference is constrained, sometimes by social norms or family pressure, but also by their own desirability on the marriage market (Becker, 1973; Kalmijn, 1998). This desirability can be determined by their embodied capital (i.e. age, health, education, physical appearance), social capital (i.e. connections or social status), and material capital (i.e. wealth, income). Individuals may compensate for the lack of one trait or resource by offering other desirable traits or resources to potential marriage partners. While the nature of these dynamics is likely to vary with the role women play in society, youth and associated fertility tend to be highly valued for women, while status and material resources tend to be highly valued for men (Buss *et al.*, 1990). Hypergamy refers to the pattern of marrying up in social or economic class, often when younger women marry wealthier or higher-status men (Coontz, 2005; Dribe and Lundh, 2010). Hypergamy can lead to intermarriage when wealth, status, or access to land varies between ethnic groups (Terashima, 1987; Kalmijn, 1993; Takeuchi, 2014).

P1.1. Among less wealthy ethnic groups, age at marriage for women who intermarried into wealthier groups will be lower relative to those who married into their ethnic group.

P1.2. Among less wealthy ethnic groups, women who intermarried into wealthier groups will report being more successful and having a better quality of life than their parents at their age, relative to women who married into their ethnic group.

P1.3. Non-Moseten men intermarried with Moseten women will be more likely to own land or will own more land than non-Moseten men who married into their ethnic group.

Hypothesis 2: Intermarried individuals play a central role in creating social connections and relationships of exchange between their respective ethnic groups. A longstanding idea in anthropology is the importance of exogamy in creating ties and relationships of reciprocity between groups. Alliance theory (Lévi-Strauss, 1949) suggests that the reciprocal and generalized exchange of marriage partners is the foundation of amicable relationships between previously unrelated groups, reducing intergroup violence and linking together the various groups as one whole: "the society". Chagnon (1968) and Rodseth & Wrangham (2004) also emphasized the role of exogamy in maintaining kinship ties across groups. Chapais (2008, 2010, 2013) has more recently argued that pair-bonding and the agnatic relationships that follow were the crucial features that led the Hominin lineages to diverge from the other great Apes; and suggested our capacity for affinal relationships may have contributed to our species penchant to profit from cooperation between strangers (Chapais, 2010). In a multiethnic society, intermarriage between ethnic groups can therefore help create bridges that foster cohesion and

cooperation. A study of U.S. married couples followed for two years after their first marriage revealed increasingly connected social networks of spouses over time (Kearns and Leonard, 2004). Even with fairly low intermarriage rates, a substantial portion of individuals can be connected when belonging to extended multiethnic families, as was shown in a study on the racial heterogeneity of extended families in the United States (Goldstein, 1999). Thus, the relationship between intermarriage and greater social integration and cohesion is likely bidirectional as the presence of a few intermarried couples could lead to greater cohesiveness and cooperation between different ethnic groups, and therefore more opportunities for interaction between the groups and more intermarriage. More generally, ethnic diversity is known to have positive effects in a variety of contexts such as improved creativity and productivity in the workplace and in schools (Stevens, Plaut and Sanchez-Burks, 2008; Hoogendoorn and van Praag, 2012). By connecting otherwise segregated social networks and increasing diversity, intermarriage may therefore have positive downstream effects.

Social Network Analysis (SNA) provides a variety of methods for describing and quantifying networks of interactions (Brandes, 2005), and will be used to test the hypothesis that intermarried individuals help connect their respective ethnic groups. SNA uses various measures of centrality to capture the importance or influence of an individual within a network. In particular, *betweenness centrality* measures the extent to which an individual in a social network connects other individuals to each other. It is calculated by counting the number of times a person is found along the “shortest path” connecting pairs of individuals in the network (Bader *et al.*, 2007).

P2.1. Intermarried individuals will have higher betweenness centrality than individuals married within their ethnic group.

P2.2. Among individuals who are part of the ethnic majority in their community, number and closeness of ties to intermarried couples will be associated with greater tolerance and trust of individuals from the largest minority group in their community.

Hypothesis 3: Intermarried couples are more resilient against shortfalls thanks to broader social support networks and more diversified production strategies. A primary function of exogamy hypothesized in the anthropological literature is to smooth the risk of exogenous shocks to food production. Anthropologists have suggested that norms favoring exogamy can be beneficial in ecologies characterized by unpredictability or variability in production (Lee, 1984; Kelly, 1995; Wiessner, 2002; Kramer and Greaves, 2011). Accordingly, exogamous norms and intercommunity marriage are more common in the ethnographic record under conditions of greater ecological uncertainty (Kelly, 1995; Dow, Reed and Woodcock, 2016). Exogamous norms also lead to societies with “extensive” kinship networks, in which individuals rely on broad and diverse social ties to help buffer risk (Walker and Bailey, 2014; Shenk *et al.*, 2016). Conversely, societies which promote endogamy are more likely to show “intensive” kinship networks, whereby family members maintain strong bonds and avoid the dilution of family wealth or status (Bugos, 1985; Borgerhoff Mulder *et al.*, 2009; Shenk *et al.*, 2016; Schulz *et al.*, 2019). Individuals who marry outside their natal group can broaden their social support networks since their spouse is more likely to know people previously unknown to them. Diversifying one's social support network may protect against shortages from localized natural disasters that affect members of the same network (i.e. aggregate shocks), and provide novel information, resources and opportunities from individuals who are less exposed to the same shocks (Granovetter, 1973). Among Ju/'hoansi foragers, for example, marrying to a family with access to a different waterhole allows them to forage at both waterholes, protecting them against either one drying up (Lee, 1984). Among South Indian farmers, families similarly use intercommunity marital arrangements strategically to reduce the variance in production associated with weather variability (Rosenzweig, 1989). In multiethnic societies where ethnicity is linked to different occupations, production strategies, and social networks, marriage between individuals of different ethnic origins may play a similar role.

P3.1. Intermarried couples will be more likely to have social ties that rely less on papaya as their main source of income, and thus will be more likely to receive help during the papaya crisis relative to couples in which spouses are co-ethnics.

P3.2. Intermarried couples will be more likely to have more diverse sources of income than couples in which spouses are co-ethnics.

P3.3. Intermarried couples will recover faster from the shortfalls caused by the papaya infection than couples in which spouses are co-ethnics.

P3.4. Intermarried couples' ability to recover faster from the papaya infection will be mediated by access to more social support during the papaya crisis and more diversified production strategies.

Hypothesis 4: Intermarriage is a fallback strategy. Individual preferences for prospective marriage partners are also constrained by the composition of the marriage market in which they are seeking a spouse. Members of numerically smaller groups are less likely to meet marriageable partners from the same group, and are consequently more likely to marry-out (Blau, Blum and Schwartz, 1982). Small group size is associated with higher exogamy rates in the Standard Cross-Cultural sample (Dow, Reed and Woodcock, 2016), and individuals from smaller ethnic or racial minorities are more likely to marry-out in the United States (e.g. Harris and Ono, 2005). Imbalances in sex ratios in a group may also drive seeking marriage partners from different groups (e.g. Angrist, 2002; Davin, 2007). Intermarriage may therefore occur primarily as a fallback strategy, in the absence of suitable co-ethnic marriage partners. If so, people may be more likely to intermarry if they are locally perceived as less attractive, for instance if they are older, or have previously been married or have offspring from a prior relationship. This relationship may be particularly evident among women, for whom youth is highly valued by prospective partners (Buss *et al.*, 1990). The predictions below apply nevertheless to both sexes.

P4.1. Intermarried individuals will be more likely to marry at later ages than co-ethnics married within the same ethnicity.

P4.2. Intermarried individuals will be more likely to have been previously married.

P4.3. Intermarried individuals will be more likely to already have children from previous marriages or relationships.

STUDY LOCATION

The proposed project will take place in the Alto Beni region in the La Paz department of Bolivia, selected for its ethnic and cultural diversity. The region is native to the Moseten, an indigenous population of ~8000 individuals, but since the 1950s has received a substantial flow of immigrants –mostly Aymara and Quechua– from the overpopulated Altiplano highlands, and to a lesser extent other indigenous and non-indigenous immigrants from all Bolivian provinces (Von Stosch, 2014). Data will be collected in the neighboring villages of Santa Ana and Puerto (see Figure 1).

Santa Ana is a Moseten village founded in 1815 (Castillo, 1988) by Franciscan missionaries (187 households, population 778 in 2018). Most residents grow rice and sweet manioc for personal consumption, but sell the majority of their crops – especially papaya, citrus, cacao, and plantain – in the neighboring market town of Palos Blancos (~13km from Santa Ana and Puerto) or in the country capital, La Paz (~250 km from Santa Ana and Puerto); some residents, mostly of Aymara and Quechua origin, also run small shops, eateries, or drive trucks or taxis in addition to agricultural activities. The adult population of Santa Ana is majority Moseten (66%) according to a village-wide census that I helped conduct in 2018 while working with the Tsimane Health and Life History Project (THLHP), with 16% of residents self-identifying as Aymara and 4% as Quechua (the largest indigenous groups in Bolivia), 7% as Leco (an indigenous group from the Franz Tamayo province in the department of La Paz), 2% as *camba* (lowlanders of mixed origins or mestizos from the Beni and the Santa Cruz regions), 2% as Tsimane (an indigenous group from the Beni, which is linguistically and culturally related to the Moseten [Sakel, 2004, 2011]), and the remaining 2% as Yuracare, Tacana, or Trinitario (other indigenous groups from neighboring regions) (see figure 2). There are no language barriers between the different ethnic groups as all residents of Santa Ana speak Spanish fluently, in addition to their indigenous language. Intermarriage is very common (42%; n=125 married couples from census data) and non-Moseten are relatively well integrated into village social and political life. Just like Moseten households, non-Moseten households may own agricultural land that is part of the *Tierra Comunitaria de Origen* (TCO) Moseten, a recognized

indigenous territory of ~100,000 hectares that collectively belongs to the Moseten since 2001 (ISEAT, 2017).

Puerto, founded in the late 1970s, is located on the northwest side adjacent to Santa Ana (see Figure 1). Its residents (~45 households, population ~180) are predominantly Aymara and Quechua, but it also includes Lecos and some Moseten who married into the community. Residents of Puerto engage in similar economic activities as residents of Santa Ana, namely horticulture, but Puerto has more shops and eateries per capita. Its location near a navigable river also helps the community serve as a port used primarily by its residents for transporting merchandise (Figure 1), hence its name “*Puerto*”. The two communities share a school (elementary through high school) and a health clinic (Figure 1), but they each have their own leadership councils and political organizations. Residents of Santa Ana and Puerto commonly frequent each other’s shops and jointly participate in sporting events and community celebrations. Conflicts over land encroachment and land use between the residents of the two communities, however, are also common (Von Stosch, 2014).

Since 2016-2017, Santa Ana and Puerto have been facing hardship due to a fungal disease impacting their most important cash crop, papaya (genus *Carica*). As a result, many residents are increasingly relying on other crops and different sources of income. Some Santa Ana residents have also relocated their papaya fields to a more distant part of the TCO Moseten.

RESEARCH COMPETENCE OF THE STUDENT AND PRELIMINARY RESEARCH

I have done graduate coursework in many relevant disciplines, including anthropology, economics, demography, geography and statistics, which combined have prepared me to undertake this project with a multi-disciplinary perspective. In 2019, I completed an M.A. in Anthropology with a formal emphasis in demography. I have been an instructor at UCSB for an undergraduate course on methods and statistics for social and behavioral sciences, and a teaching assistant for numerous lower- and upper-division anthropology courses. I am fluent in Spanish and have considerable fieldwork experience. Between 2014 and 2018, I spent a total of 6 months in Bolivia living in Moseten and Tsimane communities. I collected preliminary data, and contributed to several endeavors of the THLHP, co-directed by my Ph.D. advisor, Dr. Michael Gurven. The THLHP has worked extensively with Tsimane communities since 2002 (Gurven *et al.*, 2017) and Moseten communities since 2015. During my time in the field, I developed trusting relationships with people, and collected and/or analyzed data that resulted in three publications (two first-authored, one second-authored) (cf. Alami, Stieglitz, Kaplan, & Gurven, 2018; Alami *et al.*, *under review*; von Rueden, Alami, Kaplan, & Gurven, 2018). The proposed project has grown out of a pilot study on intermarriage I initiated in the village of Santa Ana during the summer of 2018, with funds from two competitive internal UCSB grants.

In 2018, I helped the THLHP team conduct a community-wide census of Santa Ana which includes information on the demographic composition of households, ethnic origins and marital status of all household members. I also interviewed 98 residents of Santa Ana ages 18-79 (59% women) about their marital history, their primary sources of income and open-ended questions about what they perceived to be pros or cons related to intermarriage. The majority of interviewees relied on agriculture and the sale of agricultural produce for a living (78% of pilot sample, $n=98$), but 16% had additional sources of income, and 6% owned or worked in a shop as their primary occupation. Aymara and Quechua participants had more diversified sources of income and ran most shops (figure 3). During that time, I visited Puerto multiple times, and informally discussed the topics of intermarriage and group relations with many of its residents. When asked about potential benefits of intermarriage, 49% of participants from my pilot sample ($n=98$) reported that intermarriage could help one “get ahead in life” when marrying into wealthier groups; 25% said that marrying someone from a different ethnic group “didn’t make any difference”; and 19% said that intermarried couples and/or mixed children benefited from having access to different cultures and ways of life. Others mentioned gaining access to TCO land when marrying a Moseten (3%). When asked about disadvantages of intermarriage, 28% mentioned spouses not getting along because of different attitudes towards work and finances; 19% mentioned discrimination by other group members; 18% said spouses will fight more with their in-laws; and 15% said there were no

disadvantages. Others mentioned that marrying-up to a wealthier group could result in feeling inferior (11%), or increase risk of spousal abuse (3%); To my surprise, only 6% voiced concerns about cultural or language loss among younger generations.

Lastly, I elicited opinions or impressions about multiple ethnic groups by asking a sample of 98 participants to describe up to five characteristics they like and five they dislike about each group. The way individuals belonging to different ethnic groups perceived each other reflected common Bolivian stereotypes about lowlanders and highlanders (Stearman, 1985). Trinitarios, Tacana and other indigenous groups from the lowlands, as well as non-indigenous *camba*, were said to be “friendlier” and “warmer”; Highlanders – Aymara and Quechua – were perceived to be more “hardworking”, and economically successful but more *cerrado* or “closed-off”. Mosenen and Lecos, who fall geographically at the intersection of the Andes and the Amazon were somewhere in between; and Tsimane were mostly perceived as “humble” reflecting their status as one of the most economically deprived ethnic groups in Bolivia (see figure 4).

Intermarriage was very common in Santa Ana (42% of married couples in census data; $n=134$), and the frequencies of pairings between individuals from the various ethnic groups were significantly different from what would be expected by random pairings ($X^2=69.7$, $p<0.001$). The most common pairing that followed Mosenen-Mosenen marriage (48% of married couples), was Mosenen women who married Aymara or Quechua men (16% of couples), consistent with qualitative data suggesting Mosenen women prefer to marry Highlanders over men from other groups, and also consistent with insights from field informants suggesting that marrying Mosenen women is an easy way to gain access to arable land in the TCO Mosenen, and to become a full member of the community (called *timbrado*). In addition to providing important preliminary data, I have successfully piloted all of the methods to be used in the proposed project (described below). I have also spent time establishing trusting relationships with residents and leaders of Santa Ana and Puerto. The positive feedback I received about my project, combined with my pilot study, familiarity with the study population and logistics, makes me confident that my study plan is feasible.

RESEARCH TIMELINE

The proposed project will be conducted over two field seasons. Most of the data will be collected during the first field season, which will last ~9 months (June 2020 – February 2021). The second round of data collection lasting ~ 3 months will consist in returning one year after the first field season (June 2021 – August 2021) in order to further collect data on recovery from the shortfalls caused by the papaya infection (**H3:P3.3, P3.4**). This second field season will also allow me to communicate and discuss research findings from the previous year. NSF funding is requested from June 2020 to August 2021.

| FIELD SEASON 1 | | | | | | | | | | Data analysis | | | FIELD SEASON 2 | | | Data analysis | |
|----------------|---------------------|-----|-----|----------------------|-----|-----|------|-----|-----|---------------|-----|---------------------|----------------|-----|-----|---------------|--|
| Census | Household interview | | | Individual interview | | | | | | | | Household interview | | | | | |
| Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Fev | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct + | |
| 2020 | | | | | | | 2021 | | | | | | | | | | |

RESEARCH DESIGN

To test my hypotheses, I require the following data: (1) demographic characteristics of participants from village-wide censuses (2) household wealth, economic production, and resilience to shocks from semi-structured interviews with all household heads, (3) marital histories, (4) perceptions of economic success and quality of life relative to parents (5) social networks data and (6) tolerance and trust of largest minority group, from semi-structured interviews conducted with all adult residents of Santa Ana and Puerto. With the help of three local experienced research assistants with whom I have worked in the past (and who have also worked with the THLHP), I will interview all 187 households in Santa Ana and ~45 households in Puerto, resulting in ~232 household heads and 525 adult residents. These targets exceed the minimums required as revealed from power analyses, which show a minimum of 100 households and 114

adults to achieve a moderate effect size and acceptable level of power (>80%) and significance (<0.05) for most empirical tests. While my estimation and planning should result in me reaching my targets, I will prioritize interviewing all intermarried individuals in order to maximize their representation in my sample.

During my fieldwork, I will complement structured interviews and network analysis with participant observation at community meetings, events, and parties. I will also frequently engage in casual conversations about marriage, intergroup relations and many other relevant topics, and record the opinions and emotions conveyed when discussing such topics. These contextual data will help me improve my interviews and interpret findings. All protocols for collecting the data described below have been successfully implemented in Santa Ana during my pilot study, or by the THLHP.

(1) Village-wide censuses: My first task in the field (June 2020) will be to update the census for Santa Ana to account for any demographic changes since 2018, and conduct a community-wide census in Puerto. The censuses will allow me to implement the sampling strategy described above, and to provide or update and verify information on household composition, migration history and ethnicity of all household members, which will be necessary for testing all predictions.

(2) Household wealth, economic production, and resilience to shocks: These data will be collected during both field seasons in order to measure recovery from the shortfalls caused by the papaya infection. The interview should take 3 months to complete (July 2020-September 2020 for the first round of data collection, and June 2021-August 2021 for the second round of data collection).

Heads of households in Santa Ana and Puerto will be inquired about land ownership, primary sources of income, bank savings, and material possessions. They will be asked about size of fields (in *tareas* or 1/10th hectare), the number or area of crops cultivated, crop yields, amounts sold and at what price over the past year. Such interviews combined with certain estimates (e.g. relating crop area to edible yields) have been validated in prior work with Moseten and Tsimane. Household heads will also be asked a series of questions to estimate annual income from activities other than agriculture for each household member (e.g. driving a taxi; profit from store; teaching). Material assets will be inventoried by asking whether any household members own any of a 40-item set, including domesticated animals (e.g. chickens, pigs, cows), and other wealth assets (e.g. televisions, motorbikes, fridges). Market value of these items will be estimated using local prices in the neighboring town of Palos Blancos (~13km from Santa Ana and Puerto), so that assets can be summed into a single currency for each household.

Heads of households will also be inquired about the extent to which they were affected by the papaya infection including how many *tareas* they lost to the disease each year since 2016. Following questions on impact of crop loss on reduced sales to market, I will ask about alternative income sources, to be able to estimate the net effect of the papaya infection on household income; as well as any other coping strategies or changes to their economic activities that resulted from this experience. In order to gain better ethnographic insights, participants will be asked about prior experience with shortfalls caused by crop failure or other natural disasters, and their coping strategies as well.

These data will serve multiple purposes. I will calculate the median annual household income for each ethnic group to create a ranking from the least wealthy to the wealthiest ethnic group (intermarried households will be excluded to avoid endogeneity). This income ranking will be used to assess whether resource access drives women from less wealthy groups to marry-out (**H1: P1.1, P1.2**). Data on land ownership will also be used to test the same hypothesis for men (**H1: P1.3**). Data on household wealth, economic production, exposure and recovery from the papaya infection will be used to test whether intermarried couples are more resilient against shortfalls, and if so, whether it is due to more diversified production and risk-buffering (**H3: P3.2, P3.3, P3.4**). I will explore several indices for quantifying income diversity (including the Simpson Index of Diversity and the Shannon-Wiener Index).

The following data will be collected as part of a semi-structured interview conducted with all adult residents of Santa Ana and Puerto during my first field season from October 2020 to February 2021.

(3) Marital histories: Participants will be asked about their age at marriage if currently married, previous marriages, and children from previous unions, which will be used to test whether intermarriage is driven by hypergamy (**H1: P1.1**), or is rather a fallback strategy (**H4: P4.1, P4.2, P4.3**). During this

interview I will also ask open-ended questions and gain ethnographic insights about how participants met their spouses, previous partners they considered marrying, the decision-making process leading up to marriage, their reproductive decisions, and their experience of being married to a co-ethnic as opposed to someone from a different ethnicity (or vice-versa). If unmarried, participants will be asked open-ended questions about their romantic aspirations and ambitions for the future.

(4) Perceptions of success and quality of life relative to parents: Participants will be asked a series of questions about their perceived economic wealth, food security, and ease of life compared to their parents at a similar age. These questions will be answered using a Likert scale and used to further test whether access to resources drives intermarriage for women (**H1: P1.2**).

(5) Social networks: Relational data will be collected for all adult residents to generate a complete network of social ties in Santa Ana and Puerto. In order to avoid respondent fatigue, I will elicit no more than 8 relationship types (van der Poel, 1993). For each question, participants will be requested to list up to ten individuals with whom they share a certain relationship. I will include questions eliciting affective relationships (e.g. “With whom do you share close personal matters?”), but will focus my questions on more practical support relationships (e.g. “Who would you ask if you needed to borrow 100 Bolivianos (US\$15)?”), and recall of past behavior directly tied to the papaya infection (e.g. “During the papaya infection, who helped you remove and destroy infected plants?”). Questions related to the papaya infection will also elicit “bridging” ties, for instance acquaintances who may be helpful in finding new opportunities to compensate for harvest loss, or who have access to unique information such as government sponsored programs that could help reduce food insecurity. These data will be used to test whether intermarried individuals act as “bridges”, connecting individuals of different ethnicities and improving intergroup tolerance (**H2: P2.1, P2.2**). Social network data will also be combined for spouses to test whether intermarried couples are more resilient against shortfalls thanks to more bridging or dispersed social ties (**H3: P3.1, P3.4**).

(6) Tolerance and trust of largest minority group: Adult residents who belong to the ethnic majority in Santa Ana (i.e. Mosen) and Puerto (i.e. Aymara and Quechua) will be asked a series of questions about how accepting they would be of someone of the largest ethnic minority becoming a village leader, marrying their son or daughter, opening a shop in a community, and moving in as a neighbor. These questions will be answered using a Likert scale and summarized into a tolerance score, used with social network data to test whether closeness to intermarried individuals is associated with greater tolerance and trust of individuals from different ethnicities (**H2:P2.2**).

DATA ANALYSIS PLAN

Data analysis will occur between the two field seasons (March 2021 – May 2021), and after the second field season (starting September 2021). Quantitative data will be evaluated through the use of descriptive statistics, linear models and generalized linear mixed models using the open-source statistical software program R (R Core Team, 2017). R packages *igraph* (Csardi and Nepusz, 2006) and *statnet* (Handcock *et al.*, 2003) will be used to visualize social networks. Regression analyses will differ based on the outcome being measured. For example, I will use linear models to examine differences in age at marriage (e.g. **P1.1, P4.1**), and logistic regressions when the outcome is binary such as whether individuals have been previously married (e.g. **P4.2**). Path and mediation models will be used to test whether the ability of intermarried couples to recover from the papaya infection is mediated by their broader social networks and/or more diversified sources of income (**P3.4**). Wealth, income, and land owned will be logged to ensure normality of residuals. Analyses involving longitudinal data (e.g. for testing **P3.4**) will include random effect terms to account for repeated measures of the same individuals. All analyses will adjust for potential confounds such as age, or time spent living in the community.

INTELLECTUAL MERIT

Social norms and individual preferences governing marriage between individuals belonging to different cultural, religious, or ethnic groups remain underexplored in the anthropological literature. Anthropologists and sociologists, since Tylor (1888), have emphasized the role of exogamy in forging

and maintaining relationships across groups. However, the complex nature of the individual, social and economic factors that lead individuals to marry outside of their cultural group have received less direct attention. Empirical research on intermarriage focuses mainly on industrialized societies, especially with respect to intermarriage involving minority groups, and with the exploration of recent trends in intermarriage rates. And while psychologists have been interested in how ethnicity, race or religion affect one's desirability in the dating or marriage markets, this research generally does not grapple with the role of social norms or cultural institutions which underpin these markets. Human behavioral ecology (HBE) provides a useful framework with which to gain new insight into intermarriage and the circumstances under which it occurs. HBE attempts to understand human behaviors and social systems as (mostly) adaptive responses to key features of the socio-ecology. For instance, researchers in both anthropology (Lee, 1984; Kelly, 1995; Wiessner, 2002; Walker and Bailey, 2014; Shenk *et al.*, 2016) and developmental economics (Rosenzweig, 1989) have hypothesized that exogamy may be beneficial in societies where resources are largely unpredictable or subject to frequent external shocks, because intermarried couples should have broader social networks with more diversified sources of food production. Here we extend this general hypothesis, incorporating other possible drivers of intermarriage, and test it in a naturalistic setting where we can measure people's response to an ongoing natural disaster (crop failure). More broadly, a deeper understanding of the drivers of intermarriage should be of value to researchers across social and life science disciplines interested in social cohesion and integration (sociology, political science), migration (geography, economics), cultural evolution (anthropology, biology), and diffusion of genes and culture between societies throughout human history.

BROADER IMPACTS

The proposed project will explore how marriage between individuals of different ethnicities and cultures can broaden social networks and lead to greater intergroup cooperation – the latter being critical in a context where villages often compete for access to the limited municipal and national funds needed for infrastructural improvements and other amenities. As such, this work may have considerable relevance for policy makers and development projects requiring cross-cultural collaboration. The issue of intermarriage is of particular relevance for Bolivia, one of the most ethnically diverse countries in Latin America, where social inclusion of indigenous populations is a major social and political issue, and where maintenance of indigenous culture and language is under threat by globalizing forces. Intermarriage continues to shape the meaning and significance of indigenous identity in the changing sociopolitical landscape of Bolivia in the 21st century.

Impacts on the communities. Crop failure and food insecurity are common problems in Santa Ana and Puerto. This research will identify potential coping mechanisms and strategies related to crop failure and other shocks. Results will be communicated at community meetings during my second field season and in subsequent visits. I will conduct this project in collaboration with the THLHP which has provided free medical care to Moseten communities since 2015. During my time in the field, I will act as a liaison between community members and the THLHP medical staff coordinating patients' visits and organizing workshops on diabetes prevention and management. I am also currently organizing a fundraiser to help finance the purchase of large community water tanks to improve access to clean water for Santa Ana and Puerto residents.

Training. The funds requested will support the doctoral training of a minority female graduate student. They will also support further capacity building of three Bolivian research assistants in data collection, data entry, and computer skills valuable for future employment.

Dissemination of results. In addition to presenting results to participants, booklets summarizing research results in Spanish, Moseten and Aymara languages will be made available to residents of the study communities, as well as to the *Organizacion del Pueblo Indigena Moseten* (OPIM), the central governing council which oversees all projects relevant to the TCO Moseten. Results will be submitted to high-impact journals in both anthropology and behavioral sciences to reach a broad social and life science audience. All publications will be accompanied by press releases. I will also present at anthropology (AAA, AAPA), psychology (HBES) and population studies (PAA) conferences.

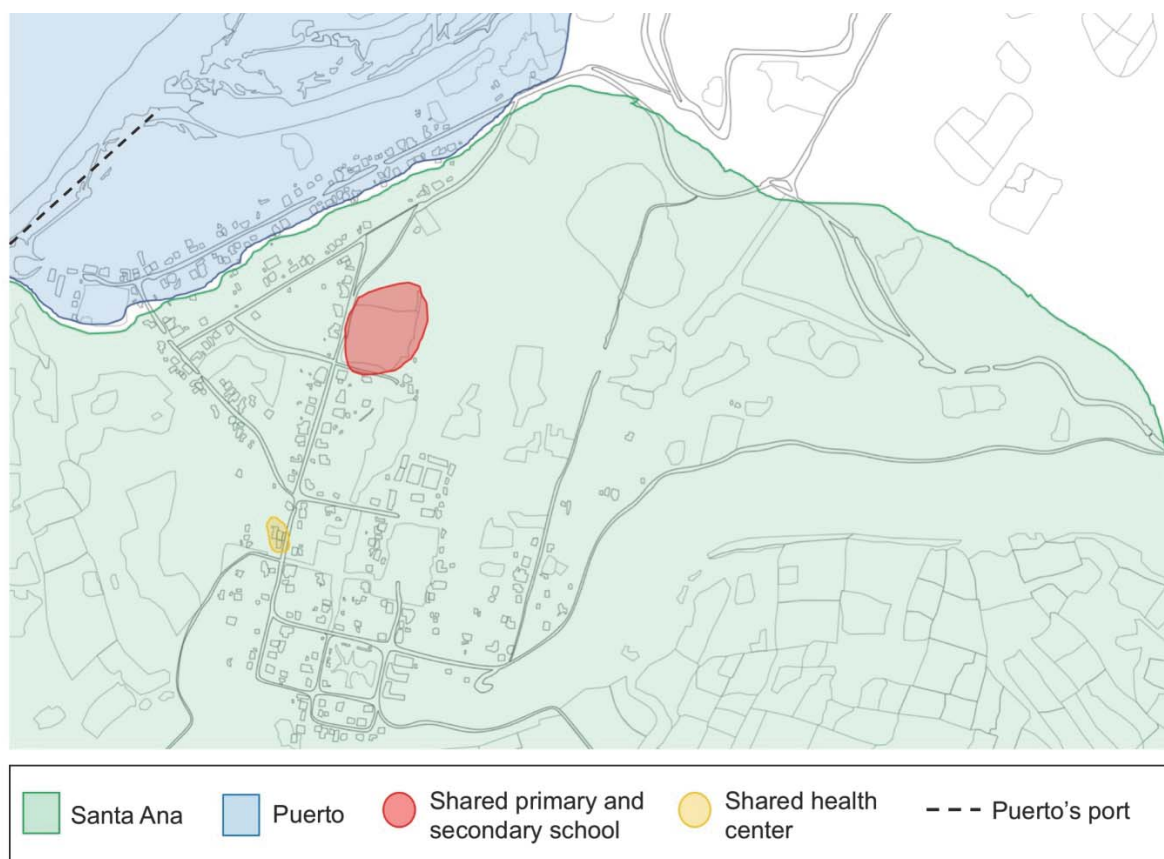


Figure 1. Map of Santa Ana and Puerto

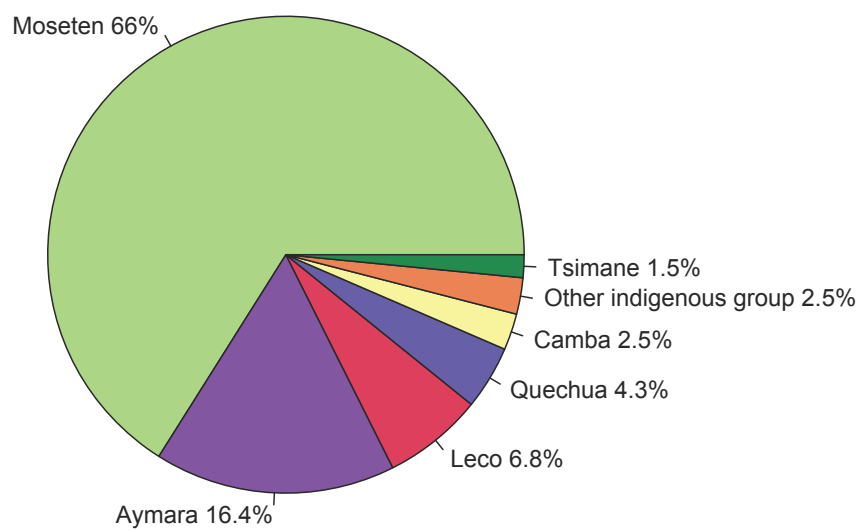


Figure 2. Ethnic composition of Santa Ana in 2018 (pop=778).

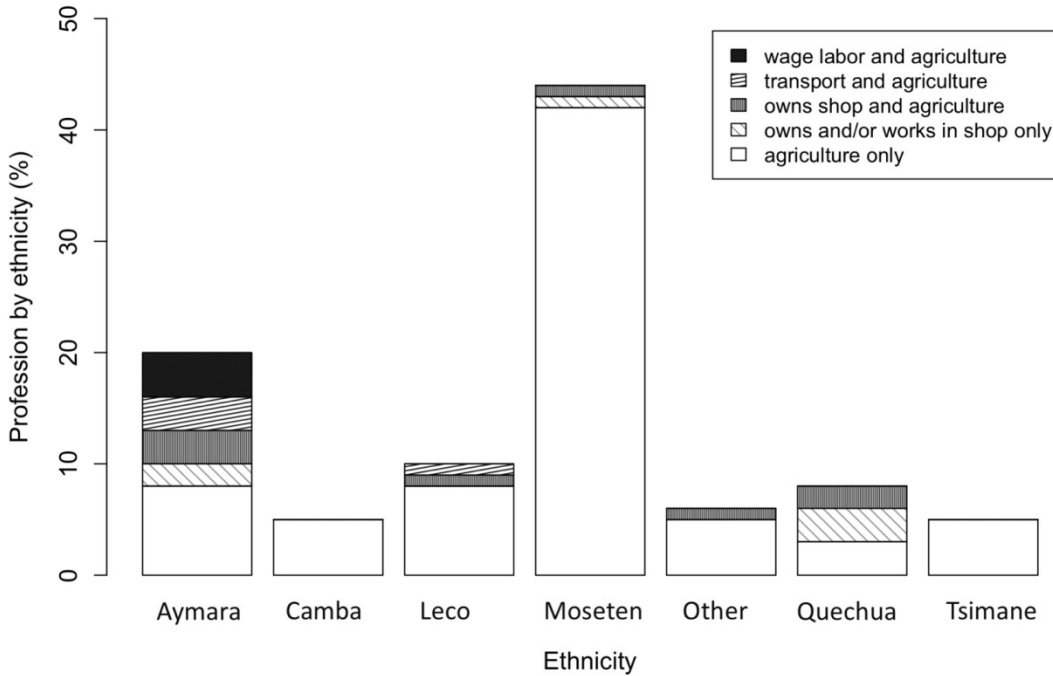


Figure 3. Profession by ethnicity in Santa Ana (pilot sample; n=98)

| | Moseten | Aymara | Leco | Quechua | Camba | Tsimane | Other |
|----------------------|--|---------------------------|---------------------------------|---------------------------|----------------------------|--------------------------------------|-------------------------|
| <i>Moseten (44%)</i> | generous no ambition | successful closed-off | good-natured frivolous | prosperous stingy | friendly superficial | humble no ambition | generous no ambition |
| <i>Aymara (22%)</i> | good-natured not future-oriented | hardworking closed-off | generous frivolous | hardworking closed-off | friendly lazy | humble untrustworthy with money | friendly no ambition |
| <i>Leco (10%)</i> | good-natured lazy | hardworking stingy | generous frivolous | hardworking stingy | warm lazy | friendly untrustworthy with money | warm no ambition |
| <i>Quechua (5%)</i> | generous lazy | hardworking closed-off | generous not future-oriented | hardworking closed-off | friendly lazy | humble untrustworthy with money | friendly lazy |
| <i>Camba (5%)</i> | hardworking closed-off | prosperous stingy | good-natured closed-off | prosperous stingy | hardworking superficial | humble drink too much | friendly lazy |
| <i>Tsimane (6%)</i> | hardworking not attached to culture | prosperous closed-off | generous closed-off | prosperous stingy | friendly superficial | hardworking no ambition | generous no ambition |
| <i>Other (6%)</i> | generous lazy | hardworking closed-off | generous frivolous | hardworking stingy | warm frivolous | hardworking no ambition | no ambition |

Figure 4. Most common opinions or impressions about different ethnic groups by ethnicity (pilot sample; n=98). What interviewees in the left rows think of the ethnic groups in the right columns. **Red**= positive stereotypes; **Blue**= negative stereotypes.

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Biographical Sketch: Dr. Michael Gurven (PI)

Michael Gurven

Professor

Department of Anthropology, HSSB 2060

University of California Santa Barbara, Santa Barbara, CA, 93106

(805) 893-2202

gurven@anth.ucsb.edu

Senior Personnel: Principle Investigator

a) Professional Preparation

| | | | |
|-------------------------------|-------------------|--------------------------|-------------|
| Pennsylvania State University | State College, PA | Anthropology/Mathematics | B.A., 1996 |
| University of New Mexico | Albuquerque, NM | Anthropology | M.S., 1998 |
| University of New Mexico | Albuquerque, NM | Anthropology | Ph.D., 2000 |

b) Appointments

| | |
|---------------|--|
| 2011- present | Professor, Level 7, Department of Anthropology, University of California, Santa Barbara |
| 2008- present | Chair, Integrative Anthropological Sciences Unit Department of Anthropology, University of California, Santa Barbara |
| 2007-2011 | Associate Professor Department of Anthropology, University of California, Santa Barbara |
| 2001-2007 | Assistant Professor Department of Anthropology, University of California, Santa Barbara |
| 2001 | Adjunct Assistant Professor Department of Anthropology, University of New Mexico |

c) Publications most relevant to the proposed project

Most relevant publications

Gurven, M., Winking, J., Kaplan, H., Von Rueden, C., & McAllister, L. (2009). A bioeconomic approach to marriage and the sexual division of labor. *Human Nature*, 20(2), 151-183. DOI: 10.1007/s12110-009-9062-8

Gurven, M. (2018). Broadening horizons: Sample diversity and socioecological theory are essential to the future of psychological science. *Proceedings of the National Academy of Sciences*, 115(45), 11420-11427. DOI:10.1073/pnas.1720433115

Pisor, A. C., & **Gurven, M.** (2018). When to diversify, and with whom? Choosing partners among out-group strangers in lowland Bolivia. *Evolution and Human Behavior*, 39(1), 30-39. DOI: 10.1016/j.evolhumbehav.2017.09.003

Pisor, A. C., & **Gurven, M.** (2016). Risk buffering and resource access shape valuation of out-group strangers. *Scientific reports*, 6, 30435. DOI:10.1038/srep30435

Walker, R. S., Beckerman, S., Flinn, M. V., **Gurven, M.**, von Rueden, C. R., Kramer, K. L., Greaves, R. D., Cordoba, L., Villar, D., Hagen, E. H., Koster, J. M., Sugiyama, L., Hunter, T. E., Hill, K. R. (2012). Living with kin in lowland horticultural societies. *Current Anthropology*, 54(1), 96-103.

Additional publications

Gurven, M., Stieglitz, J., Hooper, P. L., Gomes, C., & Kaplan, H. (2012). From the womb to the tomb: the role of transfers in shaping the evolved human life history. *Experimental gerontology*, 47(10), 807-813. DOI: 10.1016/j.exger.2012.05.006

Gurven, M., Jaeggi, A. V., von Rueden, C., Hooper, P. L., & Kaplan, H. (2015). Does market integration buffer risk, erode traditional sharing practices and increase inequality? A test among Bolivian forager-farmers. *Human ecology*, 43(4), 515-530. DOI: 10.1007/s10745-015-9764-y

Trumble, B. C., Stieglitz, J., Jaeggi, A. V., Beheim, B., Schwartz, M., Seabright, E., Cummings, D., Kaplan, H., & **Gurven, M.** (2018). Parental hormones are associated with crop loss and family sickness following catastrophic flooding in lowland Bolivia. *Physiology & behavior*, 193, 101-107. DOI: 10.1016/j.physbeh.2018.02.028

Winking, J., Stieglitz, J., Kurten, J., Kaplan, H., & **Gurven, M.** (2013). Polygyny among the Tsimane of Bolivia: an improved method for testing the polygyny–fertility hypothesis. *Proceedings of the Royal Society B: Biological Sciences*, 280(1756), 20123078. DOI: 10.1098/rspb.2012.3078

Winking, J., Kaplan, H., **Gurven, M.**, & Rucas, S. (2007). Why do men marry and why do they stray? *Proceedings of the Royal Society B: Biological Sciences*, 274(1618), 1643-1649. DOI:10.1098/rspb.2006.0437

d) Synergistic Activities

- | | |
|--------------|--|
| 2002-present | Project director of the Tsimane Health and Life History Project. Trained American and Bolivian project personnel, including training American and Bolivian physicians in bioanthropology research methods. |
| 2014 | Helped organize Tsimane Flood Relief Fund (raised \$22,600) to purchase shovels, machetes and axes, mosquito nets, and food |
| 2006-present | Facilitator of primary and advanced health care for ~16,000 Tsimane and ~3,000 Moseten Amerindians |
| 2009-present | Health consultant for Tsimane Government (Asesor de Salud, Gran Consejo Tsimane) |
| 2003-present | Instructor for graduate and undergraduate courses in human behavioral ecology, growth and development, demography, and data analysis. |

Biographical sketch: Sarah Alami (co-PI)

Sarah Alami

PhD student

Department of Anthropology, HSSB 2048

University of California, Santa Barbara, CA 93106

(805) 893-2257

sarah00@ucsb.edu

Senior Personnel: co-PI

a) Professional preparation

| <i>Institution</i> | <i>Major</i> | <i>Degree</i> | <i>Year</i> |
|---|--------------|-------------------|--------------|
| University of California, Santa Barbara | Anthropology | BA | 2014 |
| University of California, Santa Barbara | Anthropology | MA | 2019 |
| University of California, Santa Barbara | Anthropology | PhD (in progress) | 2015-present |

b) Appointments

| | |
|-------------|---|
| Spring 2019 | Instructor, Methods and Statistics for social and behavioral sciences |
| Winter 2019 | Teaching Assistant, Evolutionary Medicine |
| Fall 2018 | Teaching Assistant, Human Growth and Development |
| Summer 2017 | Teaching Assistant, Introduction to Biosocial Anthropology |
| Spring 2017 | Teaching Assistant, Introduction to Biological Anthropology |
| Winter 2017 | Teaching Assistant, Introduction to Biosocial Anthropology |
| Fall 2016 | Teaching Assistant, Introduction to Biological Anthropology |

c) Publications

Alami, S., von Rueden, C., Seabright, E., Kraft, T.S., Blackwell, A.D., Stieglitz, J., Kaplan, H., & Gurven, M. (*under review*, *Proceedings of the Royal Society B*). High social status is associated with child health among women, but not men, in a horticulturalist population.

Alami, S., Stieglitz, J., Kaplan, H., & Gurven, M. (2018). Low perceived control over health is associated with lower treatment uptake in a high mortality population of Bolivian forager-farmers. *Social Science & Medicine*, 200(September 2017), 156–165. DOI: 10.1016/j.socscimed.2018.01.017

von Rueden, C., **Alami, S.**, Kaplan, H., & Gurven, M. (2018). Sex differences in political leadership in an egalitarian society. *Evolution and Human Behavior*. DOI: 10.1016/j.evolhumbehav.2018.03.005.

Szyncer, D., Xygalatas, D., **Alami, S.**, An, X.F., Ananyeva, K. I., Fukushima, S., Hitokoto, H., Kharitonov, A. N., Koster, J. M., Onyishi, C. N., Onyishi, I. E., Romero, P. P., Takemura, K., Zhuang, J.-Y., Cosmides, L., & Tooby, J. (2018). Invariances in the architecture of pride across small-scale societies. *Proceedings of the National Academy of Sciences*, 115(33), 8322–8327. DOI:10.1073/pnas.1808418115

Sznycer, D., Xygalatas, D., Agey, E., **Alami, S.**, An, X.F., Ananyeva, K. I., Atkinson, Q. D., Broitman, B. R., Conte, T. J., Flores, C., Fukushima, S., Hitokoto, H., Kharitonov, A. N., Onyishi, C. N., Onyishi, I. E., Romero, P. P., Schrock, J. M., Snodgrass J. J., Sugiyama, L. S., Takemura, K., Townsend, C., Zhuang, J.-Y., Aktipis, C. A., Cronk, L., Cosmides, L., & Tooby, J. (2018). Cross-cultural invariances in the architecture of shame. *Proceedings of the National Academy of Sciences*, 115(39), 9702–9707. DOI:10.1073/pnas.1805016115

d) Synergetic activities

- | | |
|--------------|--|
| 2018-present | Peer reviewer for Evolution and Human Behavior, and Social Science & Medicine, and PLOS ONE. |
| 2017-present | Student representative for the Evolutionary Anthropology Society (EAS). |
| 2017 | Co-lead coordinator for the 10 th Annual California Workshop on Evolutionary Social Science (C-WESS). |
| 2016-2017 | Collected data in southeast Morocco for a project aimed at examining the role of emotions such as pride and shame in the evolution of morality (PI: Daniel Sznycer). |
| 2014-present | Field research assistant for the Tsimane Health and Life History Project (THLHP). Assisted with data collection in the field. Trained Bolivian project personnel. Analyzed blood samples for projects using biomarkers of chronic diseases of aging. |

SUMMARY PROPOSAL BUDGET

YEAR 1

| | | | | | | |
|---|------|------|------|---------------------------------|--------------------|---|
| ORGANIZATION University of California-Santa Barbara | | | | FOR NSF USE ONLY | | |
| | | | | PROPOSAL NO. | DURATION (months) | |
| PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Michael Gurven | | | | AWARD NO. | | |
| | | | | | | |
| A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets) | | | | NSF Funded Person-months | | Funds Requested By proposer |
| | CAL | ACAD | SUMR | | | Funds granted by NSF (if different) |
| 1. | 0.00 | 0.00 | 0.00 | | | |
| 2. | | | | | | |
| 3. | | | | | | |
| 4. | | | | | | |
| 5. | | | | | | |
| 6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE) | 0.00 | 0.00 | 0.00 | | 0 | |
| 7. (1) TOTAL SENIOR PERSONNEL (1 - 6) | 0.00 | 0.00 | 0.00 | | 0 | |
| B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS) | | | | | | |
| 1. (0) POST DOCTORAL SCHOLARS | 0.00 | 0.00 | 0.00 | | 0 | |
| 2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.) | 0.00 | 0.00 | 0.00 | | 0 | |
| 3. (0) GRADUATE STUDENTS | | | | | 0 | |
| 4. (0) UNDERGRADUATE STUDENTS | | | | | 0 | |
| 5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY) | | | | | 0 | |
| 6. (0) OTHER | | | | | 0 | |
| TOTAL SALARIES AND WAGES (A + B) | | | | | 0 | |
| C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS) | | | | | 0 | |
| TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C) | | | | | 0 | |
| D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.) | | | | | | |
| TOTAL EQUIPMENT | | | | | 0 | |
| E. TRAVEL 1. DOMESTIC (INCL. U.S. POSSESSIONS) | | | | | 0 | |
| 2. INTERNATIONAL | | | | | 5,700 | |
| F. PARTICIPANT SUPPORT COSTS | | | | | | |
| 1. STIPENDS \$ | | 0 | | | | |
| 2. TRAVEL | | 0 | | | | |
| 3. SUBSISTENCE | | 0 | | | | |
| 4. OTHER | | 0 | | | | |
| TOTAL NUMBER OF PARTICIPANTS (0) TOTAL PARTICIPANT COSTS | | | | | 0 | |
| G. OTHER DIRECT COSTS | | | | | | |
| 1. MATERIALS AND SUPPLIES | | | | | 0 | |
| 2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION | | | | | 200 | |
| 3. CONSULTANT SERVICES | | | | | 0 | |
| 4. COMPUTER SERVICES | | | | | 0 | |
| 5. SUBAWARDS | | | | | 0 | |
| 6. OTHER | | | | | 14,100 | |
| TOTAL OTHER DIRECT COSTS | | | | | 14,300 | |
| H. TOTAL DIRECT COSTS (A THROUGH G) | | | | | 20,000 | |
| I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) MTDC (Rate: 26.0000, Base: 20000) | | | | | | |
| TOTAL INDIRECT COSTS (F&A) | | | | | 5,200 | |
| J. TOTAL DIRECT AND INDIRECT COSTS (H + I) | | | | | 25,200 | |
| K. FEE | | | | | 0 | |
| L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K) | | | | | 25,200 | |
| M. COST SHARING PROPOSED LEVEL \$ 0 | | | | AGREED LEVEL IF DIFFERENT \$ | | |
| PI/PD NAME Michael Gurven | | | | FOR NSF USE ONLY | | |
| ORG. REP. NAME* | | | | INDIRECT COST RATE VERIFICATION | | |
| | | | | Date Checked | Date Of Rate Sheet | Initials - ORG |

SUMMARY PROPOSAL BUDGET

Cumulative

| ORGANIZATION University of California-Santa Barbara | | | | FOR NSF USE ONLY | | | | |
|---|--|--|--|---------------------------------|--------------------|-------------------|-----------------------------------|---|
| PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Michael Gurven | | | | PROPOSAL NO. | | DURATION (months) | | |
| | | | | Proposed | | Granted | | |
| AWARD NO. | | | | | | | | |
| A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets) | | | | NSF Funded Person-months | | | Funds Requested By proposer | Funds granted by NSF (if different) |
| | | | | CAL | ACAD | SUMR | | |
| 1. | | | | 0.00 | 0.00 | 0.00 | | |
| 2. | | | | | | | | |
| 3. | | | | | | | | |
| 4. | | | | | | | | |
| 5. | | | | | | | | |
| 6. () OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE) | | | | 0.00 | 0.00 | 0.00 | 0 | |
| 7. (0) TOTAL SENIOR PERSONNEL (1 - 6) | | | | 0.00 | 0.00 | 0.00 | 0 | |
| B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS) | | | | | | | | |
| 1. (0) POST DOCTORAL SCHOLARS | | | | 0.00 | 0.00 | 0.00 | 0 | |
| 2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.) | | | | 0.00 | 0.00 | 0.00 | 0 | |
| 3. (0) GRADUATE STUDENTS | | | | | | | 0 | |
| 4. (0) UNDERGRADUATE STUDENTS | | | | | | | 0 | |
| 5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY) | | | | | | | 0 | |
| 6. (0) OTHER | | | | | | | 0 | |
| TOTAL SALARIES AND WAGES (A + B) | | | | | | | 0 | |
| C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS) | | | | | | | 0 | |
| TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C) | | | | | | | 0 | |
| D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.) | | | | | | | | |
| TOTAL EQUIPMENT | | | | | | | 0 | |
| E. TRAVEL 1. DOMESTIC (INCL. U.S. POSSESSIONS) | | | | | | | 0 | |
| 2. INTERNATIONAL | | | | | | | 5,700 | |
| F. PARTICIPANT SUPPORT COSTS | | | | | | | | |
| 1. STIPENDS \$ 0 | | | | | | | | |
| 2. TRAVEL 0 | | | | | | | | |
| 3. SUBSISTENCE 0 | | | | | | | | |
| 4. OTHER 0 | | | | | | | | |
| TOTAL NUMBER OF PARTICIPANTS (0) TOTAL PARTICIPANT COSTS | | | | | | | 0 | |
| G. OTHER DIRECT COSTS | | | | | | | | |
| 1. MATERIALS AND SUPPLIES | | | | | | | 0 | |
| 2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION | | | | | | | 200 | |
| 3. CONSULTANT SERVICES | | | | | | | 0 | |
| 4. COMPUTER SERVICES | | | | | | | 0 | |
| 5. SUBAWARDS | | | | | | | 0 | |
| 6. OTHER | | | | | | | 14,100 | |
| TOTAL OTHER DIRECT COSTS | | | | | | | 14,300 | |
| H. TOTAL DIRECT COSTS (A THROUGH G) | | | | | | | 20,000 | |
| I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) | | | | | | | | |
| TOTAL INDIRECT COSTS (F&A) | | | | | | | 5,200 | |
| J. TOTAL DIRECT AND INDIRECT COSTS (H + I) | | | | | | | 25,200 | |
| K. FEE | | | | | | | 0 | |
| L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K) | | | | | | | 25,200 | |
| M. COST SHARING PROPOSED LEVEL \$ 0 | | | | AGREED LEVEL IF DIFFERENT \$ | | | | |
| PI/PD NAME Michael Gurven | | | | FOR NSF USE ONLY | | | | |
| ORG. REP. NAME* | | | | INDIRECT COST RATE VERIFICATION | | | | |
| | | | | Date Checked | Date Of Rate Sheet | Initials - ORG | | |

C *ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

BUDGET JUSTIFICATION

PI: Michael Gurven

co-PI: Sarah Alami

TRAVEL

Foreign Travel

The fieldwork will be carried out by the co-PI over two field seasons. The first field season (June 2020-February 2021) is expected to last nine months and the second field season is expected to last three months (June 2021-August 2021) for a total of twelve months. Initial data analysis will be conducted during the break in between trips (March 2021 – May 2021). Thus, the travel budget covers two round trips from Santa Barbara to Santa Ana and Puerto in Bolivia (2 x \$100 round trip from Goleta to Los Angeles Airport using the Airbus shuttle, 2 x \$1,100 round trip from Los Angeles Airport to the Viru Viru Airport in Santa Cruz, and 2 x \$190 for flights and ground transportation within Bolivia). The total costs of travel will amount to \$2,780.

Meals

The co-PI is requesting a per diem of \$8 to cover food expenses while traveling and during her time in the communities of study, that is between June 2020-February 2021 and June 2021-August 2021 (12 months total).

OTHER DIRECT COSTS

Field research assistants

Three field research assistants will be hired to help with data collection during each field season, between June 2020-February 2021, and then between June 2021-August 2021 (12 months total). Each assistant will receive a wage of \$2 per hour for 5 hours of work every day for 365 days. Costs of hiring field research assistants will therefore amount to \$10,950.

Publication costs

\$50 are budgeted for photocopies of interviews. \$150 are budgeted for the production by the co-PI of a few copies of a short booklet (in Spanish, Mosesten, and Aymara languages) summarizing the results of the research for community members. The booklets will be made available at the equivalent of the town office in the communities of study, the school, the health center, and the *Organizacion del Pueblo Indigena Mosesten* (OPIM) office in the neighboring town of Palos Blancos. The costs of publication will total \$200.

Human Subjects payment

An additional \$3,150 will be required to compensate residents of Santa Ana and Puerto for their participation in the project. Compensation for time spent assisting with research is expected by the community. Approximately 525 participants will be offered 6\$ for their participation in interviews lasting 30-60 minutes (\$3,150 total).

INDIRECT COSTS

The DHHS negotiated, predetermined indirect cost rate for off-campus research projects is 26% from July 1, 2015 through June 30, 2021 and the rate thereafter is provisional. The rate is based on MTDC excluding equipment over \$5,000, student tuition/fees and health insurance, rental of off-site facilities, scholarships and fellowships, participant support costs, as well as the portion of each subcontract in excess of \$25,000. UCSB defines a 'year' as the fiscal year that spans from July 1 - June 30 each calendar year.

(See PAPPG Section II.C.2.h for guidance on information to include on this form.)

Investigator: Michael Gurven

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Source of Support: NSF

Total Award Amount: \$ 25,200 Total Award Period Covered: 06/01/20 - 03/31/21

Location of Project: Off-Campus

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| Person-Months Per Year Committed to the Project. | Cal:0.60 | Acad: 0.00 | Sumr: 0.00 |
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Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Brain Atrophy, Cognitive Impairment and Alzheimer's in a Low CVD risk Population

Source of Support: Chapman University

Total Award Amount: \$ 1,074,887 Total Award Period Covered: 04/15/17 - 03/31/22

Location of Project: UC-Santa Barbara

| | | | |
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| Person-Months Per Year Committed to the Project. | Cal:0.00 | Acad: 1.35 | Sumr: 0.00 |
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Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Doctoral Dissertation Research: Porous cranial lesions, adult health, and the evidence for childhood anemia driven skeletal changes in a living Amazonian subsistence

Source of Support: NSF

Total Award Amount: \$ 31,044 Total Award Period Covered: 10/01/19 - 06/30/21

Location of Project: UC-Santa Barbara

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| Person-Months Per Year Committed to the Project. | Cal:0.00 | Acad: 0.45 | Sumr: 0.00 |
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Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: \$ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: \$ Total Award Period Covered:

Location of Project:

| Person-Months Per Year Committed to the Project. | Cal: | Acad: | Summ: |
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USE ADDITIONAL SHEETS AS NECESSARY

(See PAPPG Section II.C.2.h for guidance on information to include on this form.)

Other agencies (including NSF) to which this proposal has been/will be submitted.

Person-Months Per Year Committed to the Project. Cal:9.00 Acad: 0.00 Sumr: 0.00

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USE ADDITIONAL SHEETS AS NECESSARY

FACILITIES AND RESOURCES

Senior personnel: The co-PI, Sarah Alami, will conduct fieldwork in Bolivia and execute the project's research design.

Computer: Data entry will be completed on a laptop owned by the co-PI. The required softwares for data collection and data analysis are open-source (e.g. R) and/or available on computers.

Office: Office space for post-fieldwork data analysis and write-up is available to the co-PI at the Evolutionary Anthropology and Biodemography lab at UCSB.

Other Resources: UC Santa Barbara is one of only 62 research-intensive institutions in the U.S. and Canada elected to membership in the prestigious Association of American Universities, cementing its status as a higher-education leader. In its 2013 ranking of the world's top 500 universities, Leiden University ranked UC Santa Barbara number 2 for research impact in the sciences. U.S. News and World Report's 2019 "Best Colleges" guide, the most widely read college guide in the country, ranks UCSB number 5 among all public universities. UCSB's renowned faculty includes six winners of Nobel Prizes for landmark research in chemistry, physics and economics. An alumna of the College of Creative Studies was named 2009 Nobel Laureate in Physiology or Medicine. More than 60 UCSB scholars have snared Guggenheim Fellowships, an elusive honor intended for individuals who have demonstrated exceptional capacity for productive scholarship or exceptional creative ability in the arts. Our faculty members are routinely elected as members of the globe's most prestigious academic organizations. Case in point: More than 80 current or former UCSB faculty are elected fellows of the American Association for the Advancement of Science for their advancement of science or its applications. Election to the National Academy of Engineering is among the highest professional distinctions accorded to an engineer. The honor has been so accorded to 29 UCSB faculty members. UCSB is a Hispanic-Serving Institution (HSI), an elite designation by the Hispanic Association of Colleges & Universities for colleges or universities in which Hispanic enrollment comprises at least 25% of the total. Our campus was the first HSI among members of the prestigious Association of American Universities.

Administrative support: The Institute for Social, Behavioral and Economic Research will provide administrative support for this project.

DATA MANAGEMENT PLAN

Expected data

This research project will involve collecting demographic, economic, social network, and participant observation data from approximately 232 households and 525 individuals in two communities. Quantitative data will be collected via tablets using Open Data Kit software and on hard copies. Qualitative data will consist of electronic and/or handwritten field notes and audio files collected via the co-PI's smart phone. These data will be collected during two field seasons. The first field season will take place June 2020 -February 2021. The second field season will take place June 2021- August 2021. Interview protocols and questionnaire instruments will be in accordance with Internal Review Board (IRB) prescriptions. Any modifications made to original data in the process of cleaning will be recorded in digital files (written in R code) to facilitate internal auditing of data quality. The project will also make use of pre-existing demographic data collected in collaboration with the Tsimane Health and Life History Project (THLHP) in 2018.

Data Formats

The quantitative data will be kept both as hard copies and as comma-separated-value files housed within a private GitHub account. Qualitative data will be kept as electronic transcripts in word processing format (e.g., .docx) and archived as audio files. Field notes will be kept in notebooks or in electronic word processors.

Data dissemination

The co-PI will conduct community meetings in Santa Ana and Puerto, during which the main research findings will be shared and discussed with community members. A booklet summarizing the research results in Spanish, Moseten and Aymara languages will be made available to residents of Santa and Puerto as well as the *Organizacion del Pueblo Indigena Moseten* (OPIM). The co-PI will publish on her website portions of the dataset and R code for data analyses to allow replication of published studies, and facilitate access to researchers interested in cross-cultural comparisons. However, because the communities of study are relatively small and the research will include sensitive information about household incomes and wealth, marriage histories, children outside of marriage, and tolerance and trust of individuals of different ethnicities, the entire dataset will not be made available to the public. We are nonetheless fully committed to NSF's policy of data sharing and we will make anonymous and/or aggregate quantitative data available to reviewers and other researchers upon request. We may request to be included as co-authors on all reasonable publications resulting from use of our data, enabling us to review any products of associated analyses. The proposed project will include longitudinal data and is intended to serve as a baseline for future projects addressing similar issues. Therefore, personal identifiers of study participants will be archived with the data, but only the THLHP research team will only be allowed to access that information. Data will only be published on the co-PI's website or shared with researchers outside of the THLHP after identifiers are removed. Data associated with statistical analyses or data manipulation will be made available upon request from interested researchers. Our facility with R and GitHub should enable wider sharing of quantitative data than might be otherwise possible. Selections of qualitative data will be shared through quotations in publications, academic talks, posters or lectures.

Data storage and preservation of access

Physical copies of interviews will be stored at UCSB in a locked file cabinet and a locked office to which only the PI and co-PI have access to. Physical copies of quantitative data will be scanned for archiving in electronic format; all electronic data will be archived in password-protected folders regularly backed up to the co-PI's private GitHub account. Data will only be kept on tablets during the data collection phase of the project, and on laptop computers when those are the primary computer of the co-PI, password-protected, and the data are kept in password-protected folders. External hard drives will also be used to maintain the local back-up of raw data.