University of Guam/
University of Hawaii Cancer Center Partnership
U54 CA143727
U54 CA143728

Pacific Global Health Conference
October 9, 2012

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Helen JD Whippy, PhD, Principal Investigator, University of Guam
University of Guam /University of Hawaii Cancer Center Partnership (U54) – An Introduction

Population demographics & economic and healthcare indicators – GU & HI

Cancer Incidence & Mortality – GU & HI

Cancer Disparities – GU

Student training in cancer research

U54-funded research
Comprehensive Minority Institution/Cancer Center Partnership (U54)

Comprehensive partnership between Minority Serving Institution (MSI) & NCI-designated Cancer Center aimed at understanding reasons behind significant cancer disparities and related impact on minority populations.

- University of Guam/University of Hawaii Cancer Center Partnership began in 2003, and is funded through August 2014 by the NIH

- Of 12 U54 grantees, UOG/UHCC Partnership is the only U54 focusing on Pacific Islanders

- PIs: Helen JD Whippy, PhD, UOG & Carl-Wilhelm Vogel, MD, PhD, UHCC
Mutual Benefit

• Research laboratory; unique ethnic, cultural and environmental characteristics of Hawaii, Guam and the US-associated Pacific Islands (USAPI).
  • Distinct multi-ethnic populations unique to this region

• Shared commitment to cancer research and care in order to address regional health disparities.
Specific Aims

• Increase # of minority scientists of Pacific Islander ancestry in cancer research, and provide education and training opportunities for Pacific Islander students;

• Increase cancer research activities and number of UOG faculty involved in cancer research;

• Strengthen the research focus at UHCC on cancer health disparities; and

• Enhance awareness of cancer and cancer prevention, and reduce the impact of cancer on the Territory of Guam, Hawaii and the USAPI.
Rationale

- Significant health disparities, including cancer

- Significant risk factors:
  - Smoking & Alcohol
  - Betel Nut & related health issues
  - Diets high in fat and salt
  - Hepatitis B & C
  - Radiation exposure

- Pacific Islanders: highly underrepresented among cancer researchers & cancer health care professionals.
Southernmost and largest island in the Mariana Island Archipelago

Map showing where it is
Guam

● Population
  - 165,674 (2011)
  - Median age: 29
  - Life expectancy: 79
Hawaii

Population
- 1,374,810 (2011)
- Median age: 38.6
- Life expectancy: 81
## Economic Indicators

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<th>HAWAII</th>
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<tr>
<td>POPULATION BORN ON GU/HI</td>
<td>52%</td>
<td>55%</td>
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<td>FOREIGN BORN</td>
<td>32%</td>
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<td>BELOW THE POVERTY LINE</td>
<td>23% (2001 est)</td>
<td>9.6% (2010)</td>
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Health Care Indicators

GUAM:
- 3 Cancer Centers (clinics)
- Two hospitals, only one is public
- Of the 12,000 patients served, nearly half are MIP, Medicare or Medicaid

HAWAII:
- 1 NCI-designated cancer center
- 7 public hospitals & 1 military providing ca care
- 8% population uninsured
Economy

- Primarily considered an urban area (93% of GU & 89% of HI population)
- Shared economic drivers:
  - Tourism
  - Military
### CANCER INCIDENCE – Top 6

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<tr>
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<th>FEMALES - GU</th>
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<th>MALES - GU</th>
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<td>NH Lymphoma</td>
<td>Melanoma</td>
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<td>6</td>
<td>Cervix</td>
<td>Thyroid</td>
<td>Oral Cavity</td>
<td>Leukemia</td>
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- GU: approx. 316 new cases per year
- HI: approx. 6,000 new cases per year
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<td>5</td>
<td>NH Lymphoma</td>
<td>Ovary</td>
<td>Nasopharynx</td>
<td>Liver</td>
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- GU: approx. 144 deaths per year
- HI: approx. 2,000 deaths per year
Cancer Incidence Trends

For the period 2003 - 2007, Guam had a lower over-all age-adjusted cancer incidence rate (282.2 per 100,000 population) compared to the 2005 U.S. rate (458.4 per 100,000).

However, some cancers occur more frequently on Guam than in the U.S. For instance, for the same period:
High Uterine Cancer Incidence

- Uterine cancer was highest among Chamorro women - 49 times the U.S. rate (it was 39.5 times the U.S. rate for the period 1998 – 2002).

- Risk factors implicated in uterine cancer include obesity, diabetes, high blood pressure, hormone replacement therapy, or a history of endometrial hyperplasia.
High Nasopharyngeal Cancer Incidence

- Nasopharyngeal cancer (NPC) was highest among Chamorros - more than 14 times the U.S. rate.
- Risk factors implicated in NPC include smoking, long-term inhalation of dust or smoke, use of mosquito coils, eating salted fish, Epstein-Barr virus infection, Southern China ancestry.
High Thyroid Cancer Incidence

- Thyroid cancer was highest among Micronesians and was 3.5 times the U.S. rate.
- Risk factors for thyroid cancer include radiation exposure (X-ray or radioactive fallout) and a family history of thyroid cancer.
High Incidence of Cancer of the Mouth and Pharynx

- Cancer of the mouth & pharynx was highest among Micronesians - 2.9 times the U.S. rate.
- Risk factors for mouth cancer include tobacco use of any kind, heavy alcohol use, HPV infection, radiation treatment of the head or neck area, or radiation exposure, excessive sun exposure to the lips, and betel nut use.
High Liver Cancer Incidence

• Liver cancer was highest among Micronesians (6.5 times the U.S. rate) and Chamorros (3 times the U.S. rate).

• Risk factors implicated in liver cancer include Hepatitis B or C infection (alcohol intake as a contributing factor), aflatoxin ingestion
Factors contributing to high rates

• Tobacco and combined tobacco-betel nut use.
  Preventable and curable cancers such as cervical and breast cancers occur at a younger age, and demonstrate high incidence rates comparable to other developing countries and result in high mortality due to lack of primary prevention and early detection.
• Obesity and diet
  Mammography and screening for most types of cancer is not available in many places in the Marshall Islands nor in the Federated States of Micronesia.
• Working equipment for diagnosis and early treatment of cervical cancer is non-existent in several areas of the Freely Associated States.
Student Training in Cancer Research

• Increase # of minority scientists of Pacific Islander ancestry in cancer research, and provide education and training opportunities for Pacific Islander students.

• **Full Program I (Training and Education):** *Minority Pacific Islander Cancer Research, Student & Faculty Development (J. Peterson / C. Vogel):*
  1. Student scholarships; and
  2. Specialization in cancer health disparities in Micronesian Studies Program
Student Training in Cancer Research

• **Scholarships** for students at the master’s level at UOG: over 30 students supported to date

• **Scholarships** for students at the doctoral level at UH:
  - 1 PhD graduate now on faculty at UOG & involved in U54 research;
  - 3 doctoral students: 2 in year 2 & 1 in year 3
  - 1 master’s student in nutrition
# Training & Education Program

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**Student Tracking Matrix for U-54 / U-56 UOG/UHCC Partnership, as of July 2012**

**UOG students**

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1. Please see listings of conferences under Conferences worksheet.
2. Please see bibliography under Publications worksheet.

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<tr>
<th>Name</th>
<th>Faculty Mentor</th>
<th>Full MA/MS stipend</th>
<th>Partial US4 stipend</th>
<th>Partial support from UC</th>
<th>Completed 1st Year</th>
<th>Completed 2nd Year</th>
<th>Completed Thesis</th>
<th>Awards, Honors, Conference Presentation</th>
<th>Entered Doctoral Program</th>
<th>Began Research Assistant in Cancer Research</th>
<th>Subsequent position in cancer research</th>
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Student Training in Cancer Research

- Increase # of minority scientists of Pacific Islander ancestry in cancer research, and provide education and training opportunities for Pacific Islander students;
  - **Specialization** in cancer health disparities in UOG’s Micronesian Studies Program
  - **Monthly cancer health disparities seminar** via video teleconference
Student Training in Cancer Research

• Increase # of minority scientists of Pacific Islander ancestry in cancer research, and provide education and training opportunities for Pacific Islander students;
  • **Graduate assistantships** on U54-funded cancer research: 8 currently funded projects with focus on betel nut, youth tobacco prevention, breast cancer risk, and cancer health information.
8 U54-Supported Research Projects

1. **Pilot Project I:** *Development of Protocols for Studying Oral Precancerous Lesions and Other Health Risks Among Betel Nut Users in Micronesia* (Y.C. Paulino/ E. Hurwitz)

2. **Pilot Project II:** *Sociocultural Factors Affecting Betel Nut Chewing among Pacific Islanders on Guam* (K. Murphy/ T. Herzog)

3. **Pilot Project III:** *Identification and Quantification of Alkaloids in Varieties of Areca (Betel) nut consumed on Guam* (N. Suleman/ A. Wright)

4. **Pilot Project IV:** *The Influence of Areca (Betel) Nut Chewing on the Oral Microbiome in Micronesia* (Y. Paulino/ M. Goodman)

6. **Pre-Pilot I**: Functional assessment of molecular components of Areca nut involved in pro-inflammatory mechanisms of immune cells (N. Suleman/ A. Wright/ R. Penner)

7. **Pilot Program I (Outreach)**: Community Outreach to Reduce Tobacco Use Disparities among Pacific Islander youth Living in Guam (A. David /N. Palafox)

8. **Full Project I**: Development of a Breast Cancer Risk Model for the Pacific (R. Leon Guerrero / R. Novotny)
Intended Outcomes

- Increased **# of UOG students** engaged in cancer research;
- Increased **# of cancer researchers of Pacific Island ancestry** in the US;
- Increased **# of UOG faculty engaged** in cancer research, training & education, & outreach;
- Increased **# of UOG faculty serving as PIs** on traditional investigator initiated grant awards in cancer research;
- Increased **# of peer-reviewed publications** by UOG faculty engaged in research and the **# of joint UOG/UHCC publications**;
- **Greater focus** of UHCC research on cancer health disparities among Pacific Islanders;
- **Increased awareness** of cancer & cancer prevention in the multiethnic communities served by UOG & UHCC;
The U54 Team in Guam - March 2011
Mahalo
Si Yu’us Ma’ase