
A BILL FOR AN ACT

RELATING TO HEALTH.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

1 SECTION 1. The legislature finds that liver cancer in
2 Hawaii occurs at extremely high rates. According to the United
3 States Centers for Disease Control and Prevention and the Hawaii
4 Tumor Registry, Hawaii has had the highest or second-highest
5 rate of liver cancer among all of the states in recent years.

6 Every year in Hawaii there are one hundred eighty-four
7 newly diagnosed cases of liver cancer, including bile duct
8 cancer, according to the Hawaii Tumor Registry. From 2004 to
9 2013, available data on liver cancer indicates an annual
10 increase in Hawaii of 2.1 per cent in males and 1.3 per cent in
11 females, while the incidence of many other cancers such as
12 colon, lung, prostate, and stomach cancer declined. There are
13 currently about one thousand patients in Hawaii fighting liver
14 cancer and bile duct cancer, both of which are almost always
15 fatal.

16 The legislature further finds that liver cancer, which
17 starts in the liver and includes bile duct cancer, is most



1 commonly caused by the hepatitis B virus, hepatitis C virus, and
2 heavy alcohol consumption. In Hawaii, however, these factors
3 are near the national average, which suggests that other factors
4 may be contributing to the high occurrence of liver cancer in
5 the State. Other factors that can cause liver cancer are non-
6 alcoholic steatohepatitis (NASH or fatty liver); infectious
7 agents such as liver fluke, a type of parasitic flatworm found
8 in fish, shrimp, and vegetables grown in fresh water; and
9 consumption of foods containing aflatoxins, a fungus abundant in
10 warm and humid regions that can grow on foods, such as grains
11 and nuts that are stored improperly. Almost all of these
12 possible etiologies lead to chronic inflammation in the bile
13 ducts. Such inflammation can result in genetic alterations in
14 the liver and bile ducts, which predispose individuals to the
15 development of cancer.

16 The precise etiology of the increased incidence of liver
17 and bile duct cancer in Hawaii is not known. Understanding this
18 is essential in order to implement appropriate public health
19 interventions to decrease the burden of this disease. Recent
20 research at the University of Hawaii cancer center suggests that
21 many individuals who are not obese can accumulate liver fat



1 insidiously that may predispose them to cancer. Also, the
2 prevalence of aflatoxins and cancer-causing liver fluke
3 infections in Hawaii is not well-defined.

4 In addition, liver and bile duct cancer has racial and
5 ethnic predispositions, with the highest incidence and mortality
6 rates seen in Native Hawaiian males and Chinese females. The
7 reason for the racial and ethnic disparities requires further
8 study but may possibly be related to environmental exposures.

9 In order to better understand the etiologies of liver and
10 bile duct cancer, the high incidence of this disease compared to
11 other states, and the racial and ethnic disparities, the
12 University of Hawaii cancer center is proposing a three-year
13 study with the following goals:

- 14 (1) Examine the incidence of insidious fatty liver across
15 diverse population groups in Hawaii and correlate with
16 environmental and dietary exposures that may be
17 causative;
- 18 (2) Define the incidence of liver fluke infection and
19 aflatoxin exposure in diverse population groups in
20 Hawaii, correlate exposure to the development of
21 chronic liver inflammation and cancer, develop



1 biomarkers that can be utilized for diagnostic and
2 prognostic purposes in exposed individuals, and
3 develop cancer prevention interventions to mitigate
4 the risk of future liver cancer development; and
5 (3) Identify additional biomarkers, such as bile acid or
6 intestinal microbiome composition, that may correlate
7 with the development of liver and bile duct cancer in
8 order to inform public health interventions for liver
9 and bile duct cancer prevention.

10 Liver cancer is the leading cause of cancer deaths
11 worldwide, but accounts for only 2.4 per cent of all new cancer
12 cases in the United States. Therefore, it has not been a high
13 priority for research funding from the National Institutes of
14 Health. Since liver cancer is so widespread in Hawaii, where it
15 is the fifth most common cause of cancer mortality, more
16 resources need to be devoted to research. The University of
17 Hawaii cancer center is preparing to examine the causes of liver
18 and bile duct cancer with specific attention to disparities
19 across different racial and ethnic groups in order to inform
20 public health and medical interventions to reduce the burden of
21 this disease.



1 The purpose of this Act is to appropriate funds to the
2 University of Hawaii cancer center to determine the etiologies
3 of the high incidence of liver and bile duct cancer in Hawaii.

4 SECTION 2. There is appropriated out of the general
5 revenues of the State of Hawaii the sum of \$350,000 or so much
6 thereof as may be necessary for fiscal year 2019-2020 for the
7 University of Hawaii cancer center to determine the etiologies
8 of the high incidence of liver and bile duct cancer in Hawaii.

9 The sums appropriated shall be expended by the University
10 of Hawaii for the purposes of this Act.

11 SECTION 3. The University of Hawaii cancer center shall
12 submit a report of its findings, including how the appropriated
13 funds were spent, to the legislature no later than twenty days
14 prior to the convening of the regular session of 2020.

15 SECTION 4. This Act shall take effect on July 1, 2019.



Report Title:

University of Hawaii; Cancer Center; Liver and Bile Duct Cancer;
Liver Flukes; Appropriation

Description:

Appropriates funds to the University of Hawaii Cancer Center to determine the etiologies of the high incidence of liver and bile duct cancer in Hawaii. Establishes reporting requirements.
(HB654 CD1)

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