
The Radiographer

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Melissa Hart, MHA RT (R)(M), Editor



The Missouri Society of Radiologic Technologists was founded in 1931, chartered as a professional and scientific society dedicated to education, communication and patient care.

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From the President...



Dear MSRT members, colleagues and friends,

As I reflect on our 81st annual meeting, where the quality of the program set a new bar for both excellence and breadth of educational offerings, and the vibrancy and excitement surrounding the society, I am humbled to be your President for the coming year. The excitement was clearly palpable at the meeting and I will do my best to continue to make the MSRT the place for all of your needs in education, networking, professional achievement and sharing ideas about how to bring unquestionable value and safety to our patients, our peers and our students.

I extend my personal appreciation to all our current and hopefully soon to be members for making MSRT one of the local authorities in the vast and growing field of Radiologic Science. As networking is one of our highest priorities, our website is just one of many communication tools offered by the MSRT. Others include the *Radiographer*, seminars / conferences, the newsletter and social media. It is my personal goal to reach out to as many individuals dealing with radiation and imaging services as possible during my one year as your President.

As your President, I believe I am here at your request to move the MSRT community forward for the next year. I absolutely cannot do this alone and need everyone's help and support. The economy continues to be a challenge to all associations and another of my goals is fiscal responsibility without sacrificing the basics. We are all being challenged to create, innovate and simply do more with less. I am committed to reviewing the successes of the past years and our Strategic Plan which requires a vision, core purpose and core organizational values. Strategic Planning requires a commitment to review and respond and keep the membership in touch with any progress being made on their behalf. The ASRT technologist survey gave MSRT a tremendous amount of good suggestions, ideas and opportunities for improvement as well as constructive criticism. We need your continued input to the board.

Advocacy and licensure is one of MSRT's top priorities this year as well and we are planning to make a big push. Please take time to follow our progress on LinkedIn and Facebook and join in the fight. We need everyone's help to make this a reality for the good of the profession!

I am honored that you elected me to this position and will do my absolute best to lead the society forward in a productive, professional manner while listening to you all. We are a community committed to providing the safest work environments possible for all people working in and around radiological hazards in the state of Missouri. It is a huge delicate balance of personalities and reality but together we can do it.

Sincerely,

Kelley McDonald

From the Student Interns...



My name is Taylor Dixon and I attend Rolla Technical Center in Rolla, MO.

Radiography came as an easy choice for me because of Health Occupations class in high school. This decision was

further enhanced by the volunteer work I did in the Radiology Department at a local hospital.

As a young professional, I am willing to serve the MSRT wherever I am needed. The experience I will gain as the one of the MSRT interns will allow me to give back to the profession of radiologic technology.

I hope to become a mentor for new technologists. I will represent the organization well by presenting self-confidence and a positive attitude at all times. I am looking forward to networking with other radiologic technology professionals on both the state and national levels.

My career goals include graduating in 2014 and going on to attend radiation therapy school. I want to provide excellent care to my patients by using my excellent interpersonal skills to put others at ease during a difficult time in their life. I also want to be an active member of the MSRT by eventually serving as an officer on the Board of Directors.

~Taylor Dixon

My name is Kelsey Fellows and I attend Southeast Missouri Hospital of Nursing and Health Sciences in Cape Girardeau, MO.



When Casey Scott [student intern, 2012-

2013] came to my school,

she inspired me and I appreciate the opportunity to inspire others in the same way. I will make classmates, colleagues, family and friends aware of the society and the wonderful activities they do every year, including supporting the CARE bill.

After completing my term as a student intern, I will become a lifelong member of the MSRT and attend the activities and meetings from this year on. These opportunities and privileges will not only allow me to grow in my profession, but I will also make lasting friendships. This internship will support me professionally by proving that I am willing to step up and be a leader in my profession.

My career goals begin with obtaining the best education possible while being involved in the MSRT. The skills I learn from my education and the society will provide me with the opportunity to continually grow and exhibit my love for the profession. My five year plan is to be a registered radiologic technologist, a graduate of a radiation therapy program and a board member of the MSRT.

~Kelsey Fellows

Congratulations to all winners from the 2013 MSRT Annual Conference!

Technologist Essay Winners

1st Place: Benjamin Morris, Cox Health Medical Center - Branson, *Is Cancer Contagious?*

2nd Place: Stacy Wilfong, Mineral Area College, *Pediatric Radiation Protection*

Student Essay Winners

1st Place: Aaron Beargie, Hillyard Technical Center, *Contrast Induced Nephropathy*

2nd Place: Mary Winters, St. Luke's School of Radiologic Technology, *Improving Breast Cancer Screening and Diagnosis*

3rd Place: Yolanda Gilmore, Missouri Southern, *Magnetic Resonance Imaging and its Uses in Diagnosing Navicular Syndrome in Horses*

Technologist Display Winners

1st Place: April Young, State Fair Community College, *Clean Hands Saves Lives*

Student Display Winners

1st Place: Shelene Hanley, Rolla Technical Center, *Be a Doll, Pay Attention*

2nd Place: Holly Hiatt, Rolla Technical Center, *Are the Teenage Mutant Ninja Turtles Really Mutant?*

3rd Place: Taylor Dixon, Rolla Technical Center, *Brachytherapy Doesn't Have to Be Scary!*

MSRT Student Scholarship

Jessica Yach, Mercy Hospital, Springfield

Robert A. Feldhaus Memorial Student Scholarship

Candace Rongey, Hillyard Technical Center

Stephanie A. Whisler Memorial Student Scholarship

Paige Crump, Rolla Technical Center

Congratulations to the 2013 Student Bowl winners!



1st place winners (pictured above): Rolla Technical Center –Dillon Renfro, Paige Crump, Krista Madden, Maggie Ogden (Coach), Gary Howard

2nd Place: Saint Louis Community College at Forest Park – Shaun Fisher, Andrea Theby, Greg Taylor, Sally Polta (Coach), Lena Psara

3rd Place: Colorado Technical University –Katelyn Haberkorn, Mark Sears, Aaron Beargie, Rodney Fisher (Coach)

4th Place: St Luke's - Aaron Bowen, Julie Grove, Corben Palmer, Mary Wooldbridge (Coach), Mary Winters



Volunteer spotlight: Q & A with a MSRT Volunteer

Find out why volunteers choose to dedicate their time to the MSRT...and perhaps become inspired to do the same! This edition features Casey Scott, RT (R).

Q. How did you become involved with the MSRT?

A. I first became involved with the MSRT when I joined as a student member. Shortly after, I applied for – and was awarded – the student intern position.

Q. What is your current position on the MSRT Board of Directors?

A. I now serve as the Student Intern Co-Chair. I will work closely with our student interns by guiding them with the experience I obtained as last year's intern.

Q. What is your most memorable experience as a volunteer for the MSRT?

A. Traveling to our nation's and state's capitols to lobby for licensure. We are slowly making progress with licensure on the state and federal levels. I feel I am truly making a presence known for radiologic technologists when I visit our representatives and senators.

Q. What advice do you have for others who might be thinking about volunteering?

A. Do it! We need you! We need radiologic technologist representation in our state. We also need to make our voices heard in Washington D.C. Contacting your representatives and senators and coordinating with the MSRT are the easiest ways to start involvement.

Q. What has volunteering for the MSRT done for you?

A. Being involved with the MSRT has played a significant role in my student career. I have developed my professional and personal skills beyond that which I ever thought possible. I have made connections and friends that will last a lifetime. The people I work with on the board are phenomenal! They care about the advancement of their profession and work hard to ensure a better future for technologists and students.



CALLING ALL VOLUNTEERS!!!

Interested in *enhancing* your career? Want to *give back* to your profession? **Consider volunteering on the MSRT Board of Directors!** We have many committees and positions waiting for you! We are looking for volunteers for 2013-2014. Contact Kelley.Mcdonald@mosrt.org.

MSRT honors Radiologic Technologists at the 2013 annual conference

Murray Lecturer



Pamela Fulmer, BA RT (R)(M)(QM)

MSRT Award of Excellence



**Jason Young, BS RT (R)
Cox College, Springfield**

MSRT Life Membership



**Peggie Sanders, BA RT (R)(M)
Brown's Medical Imaging**

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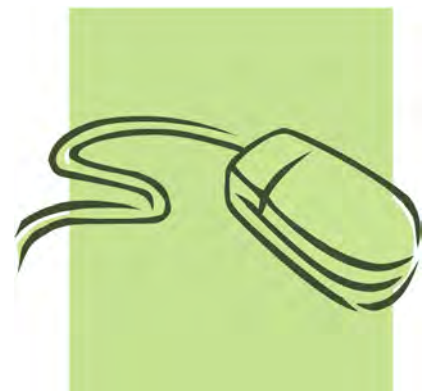
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HISTORICAL TIDBITS...from MSRT Historian, Martin Henson RT (R)

- The American Registry of Radiographers began in 1922
- There were 57 original (Charter) members of the MSRT when it began in 1931
- Since 1954 there have been 11 Honorary Members and one Honorary Technologist
- Our first President was Frank Senechal. He was an officer with the American Society of Radiographers and was instrumental in getting the National meeting held in St. Louis, Missouri. He died in December 1931.
- There have been 21 recipients of the Mallinckrodt© Award of Excellence/Outstanding Technologist Award. There are only two people who received the award twice: Debra Hurst (1993 & 2002) and Anne (Rutz) Brittain (2003 & 2008). This award was given from 1987 to 2009.

LEGISLATIVE UPDATE



Diane Hutton, BA RT (R), Legislative Activities Chair

RT in JC was a huge success! We had 55 attendees, including some students. Thank you to everyone who attended. We had the opportunity to bring forth our message as medical professionals. Many legislators found it amazing that we are *not* licensed by the state! Our message was clear: we are medical professionals who want to make certain our patients are safe when having any type of medical imaging procedure. This can only be done with standardized education and certification.

The bill introduced by Representative Higdon, HB 770, was sent to the Licensure committee. However, the chairman of that committee does not feel it is a needed piece of legislation; so, it will not make it out of that committee. I do not look at this as being a defeat; this delay will give us an opportunity to refine the bill before it is reintroduced in the next session. We do have several other legislators who are on board with this issue. We must remain vigilant in speaking with our representatives and senators about our issues.

Missouri's Barbara Hente honored with ASRT Life Membership



Barbara Hente, B.A., R.T. (N), CNMT, FASRT, will be elevated to Life Member status during the ASRT Annual Governance and House of Delegates meeting in Albuquerque, NM, June 14-16. In order to be bestowed this honor, individuals must be a continuous member of the ASRT for at least 30 years, participate in a number of volunteer activities and demonstrate dedication to the ASRT and radiologic technology profession. Mrs. Hente is the 24th member of the ASRT to achieve life membership status since the honor began in 1938.

Mrs. Hente joined the ASRT in 1977. Since then she has volunteered her time for a variety of activities. She was the ASRT's representative on the Joint Review Committee on Nuclear Medicine Education for 12 years and has served in the House of Delegates as Nuclear Medicine chapter delegate and Missouri's affiliate delegate. In 1997, Mrs. Hente became an honorary ASRT Fellow for her outstanding contributions to the ASRT and the radiologic technology profession. Mrs. Hente is a past-president of the MSRT. She remains active in the MSRT as well as in Missouri's 4th district and has achieved life membership status in both organizations. Mrs. Hente is currently a nuclear medicine technologist for BarNor services, a Granite City firm specializing in staffing, educational product development and support for the radiologic sciences profession.

SAVE THE DATE!

**THE 82ND ANNUAL MSRT CONFERENCE WILL
BE APRIL 2-5, 2014**

**NEW LOCATION: HOLIDAY INN EXECUTIVE
CENTER, COLUMBIA, MO**

The following essay is the first place winner under the MSRT Technologist Essay category. It is reprinted with permission from the author, Benjamin Morris, MSED, R.T. (R)(T)(CT) of CoxHealth Medical Center, Branson, MO.

Is Cancer Contagious?

Benjamin J. Morris, MSED, R.T.(R)(T)(CT)

Is cancer contagious? On the surface, this may seem like a very simple question to answer with a definitive “no.” However, it is not that simple. The risk of “giving” someone cancer is a fairly common question asked by cancer patients and their families and appears to be a question that spans centuries. In the 17th and 18th centuries, many believed that cancer was contagious. As a result, cancer patients were isolated and shunned. In fact, the first cancer hospital in France was forced to move from the city in 1779 because of the fear of the spread of cancer throughout the city. Even though our understanding of cancer has changed over the years, the perception that cancer is contagious continues in some cultures. In 2007, LIVESTRONG conducted a global cancer research study intended to give people affected by cancer a chance to share their cancer experiences and their perspectives on the cancer problem.¹ Worldwide, 16% of people believe that a person can catch cancer from someone else. This belief was particularly high in Mexico (33%) and India (29%). Although cancer is not generally considered a contagious disease, recent advances in molecular biology, virology, and genetics have raised a number of interesting questions that cast doubt on this belief.

Carcinogens are contagious

Discovered in Africa in 1958, Epstein-Barr virus EBV (Figure 1) was the first virus determined to have a direct relationship with carcinogenesis.² EBV is not limited to Africa and now infects more than 90% of the world’s adult population. The virus is transmitted through salivary contact. Acute infections primarily affect the oropharynx and result in infectious mononucleosis, commonly called “mono.” Burkitt’s lymphoma is a particularly aggressive lymphoma. All endemic Burkitt’s lymphoma in equatorial Africa and Papua New Guinea are the result of EBV infections. Nonendemic Burkitt’s lymphomas were once rare but the incidence has increased dramatically due to high prevalence in AIDS patients. Only 15-30% of nonendemic Burkitt’s lymphomas are associated with EBV in the US but are higher in other countries, like Brazil (85%). EBV also plays a role in other cancers such as Hodgkin’s disease, non-Hodgkin’s lymphoma, nasopharyngeal carcinoma, and gastric cancer.

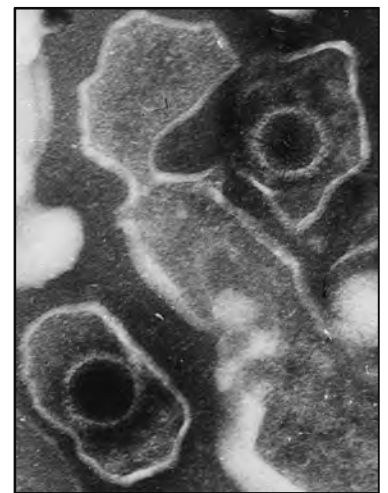


Figure 1: Electron microscope view of EBV

One of the first and best documented cases of viral carcinogenesis was caused EBV.³ Over a 3 day period in 1983, two California cousins were diagnosed with non-Hodgkin's lymphoma. A month earlier, a sister-in-law of one of the cousins, living in Washington state was also diagnosed with non-Hodgkin's lymphoma. A few months later, a daughter of one of the cousins living in Georgia was also told she had non-Hodgkin's lymphoma. Despite initial skepticism by the patients' oncologists, the family was able link the cancers back to a single relative. In 1982, a 63-year-old South African aunt had visited all of them in a cross-country tour of the family. Family members recalled that the aunt had suffered from a severe sore throat during her visit. Even though the family is white and Burkitt's lymphoma primarily affects black African children, biopsy samples from all effected family members confirmed the presence of EBV.

Human Papilloma virus (HPV) is also a well known carcinogenic virus.⁴ HPV (Figure 2) is actually a group of more than 150 related viruses. Over 40 of these viruses spread through direct skin-to-skin contact during vaginal, anal, and oral sex; making HPV the most common sexually transmitted infections in the US with more than half of sexually active people are infected with one or more HPV types. HPV infections are believed to be responsible for approximately 5% of all cancers worldwide. Virtually all cervical cancers are caused by HPV infections but two subtypes, HPV-16 and HPV-18, are responsible for about 70 percent of all cases. These two subtypes are also linked to other cancers. About 85 percent of all anal cancer cases are caused by HPV-16. More than half of the cancers of the oropharynx, vagina, vulva and penis are linked to HPV-16 or HPV-18. The connection between HPV infections and cervical cancer has led to the development of two vaccines, both marketed for the prevention of cervical cancer.

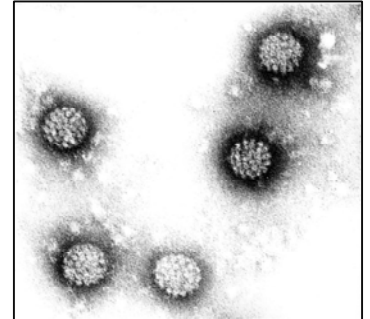


Figure 2: Electron microscope view of HPV

Hepatitis B (HBV) primarily attacks the liver and can cause both acute and chronic disease.⁵ The virus (Figure 3) is transmitted through contact with the blood or other body fluids of an infected person. About 2 billion people worldwide have been infected with the virus and about 350 million live with chronic infection. About 25% of adults who become chronically infected during childhood later die from liver cancer or cirrhosis. Patients with chronic hepatitis B have increased risk of hepatocellular carcinoma (HCC), in particular those with active liver disease and cirrhosis.⁶ In fact, HBV carriers have a 20-100-fold higher risk of HCC than uninfected individuals. Chronic infection with hepatitis B and C causes 75-80% of HCC diagnosed world-wide. Individuals with HBV are also more than twice as likely to develop pancreatic cancer.

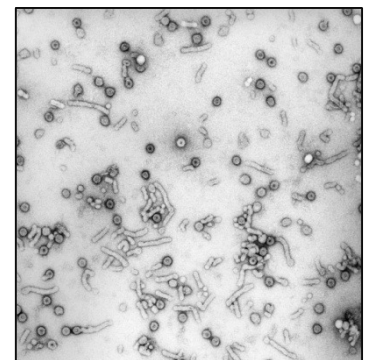


Figure 3: Electron microscope view of HBV

Other known carcinogenic viruses include Kaposi's sarcoma herpesvirus, merkel cell polyomavirus, human T-lymphotropic virus-1, hepatitis C, and xenotropic murine leukemia virus-related virus. Other viral etiologies for cancer continue to be explored.⁷

The exact mechanism of viral carcinogenesis is the result of a series of complex events and not completely understood. Some form of genetic instability has been observed in all malignant cells.⁸ Viral infections can lead to two specific forms of genetic instability, aneuploidy and gene mutations, during cell division that may aid in the transformation of a health cell into a cancerous cell. Aneuploidy is believed to be the key ingredient in carcinogenesis because it allows other mutations to occur. A second process necessary for viral carcinogenesis is cell immortalization. This does not mean that the cell will never die; instead, it is a phenomenon where a cell bypasses apoptosis and continues to divide. For tumors, cell immortalization is the result of the creation of oncogenes and/or the loss of tumor suppressor genes. A final process needed for viral carcinogenesis is immunosuppression. Many virus-associated cancers arise in an immunosuppressed environment. In non-immunosuppressed individuals, most viruses have developed mechanisms to avoid immune detection by down regulation of the major histocompatibility complex (a molecule on the surface of cells that interacts with white blood cells and other immune system cells). All three of these components (genetic instability, cell immortalization, and immunosuppression) need to be present for a virus to transform a health cell into a malignant cell. It is however important to note that viral infections alone are not sufficient to cause cancer formation.⁹

Cancer is transmissible

Transmission of cancer from mother to fetus has been reported. There are approximately 3,500 pregnancy complicated by cancer each year. Only 17 documented cases of probably metastasis to the fetus have ever been recorded; the first in 1866. Most mother to fetus transmissions are melanoma, leukemia or lymphoma.¹⁰ One recent report documented an acute lymphocytic leukemia (ALL) transmission.¹¹ Thirty-six days following delivery, a 28-year-old Japanese mother was found to have abnormal vaginal bleeding. On day 39, she developed a fever and on day 43 the bleeding became uncontrollable. Lab tests confirmed a diagnosis of ALL. Typical lab tests on the child at the time of birth did not reveal any hematological abnormalities although ALL screening was not performed. At 11 months, the child was admitted to the hospital with right cheek swelling. MRI revealed a cheek mass and pleural effusion. The cheek lesion was biopsied and initially diagnosed as a B-cell lymphoma. However, DNA testing of the pleural effusion revealed a genetic match to the mother's ALL. Further testing on the cheek lesion also revealed a genetic match to the mother's ALL. Archive neonatal blood samples were retested and confirmed the presence of cancer clone cells at the time of birth.

There is significant debate over whether or not transfusions of blood products from donors with cancer can lead to cancer formation in the recipients. Each year over 5 million Americans receive 30 million transfusions of blood products.¹² A Swedish study found that 3% of blood recipients are exposed to blood from donors with precancerous

conditions but demonstrated no increase in overall cancer incidence.¹³ Other studies have found a link between transfusion of tainted blood with an increased risk of cancer transmission. These studies estimate that 0.06% of blood transfusion recipients develop a cancer from their donor.¹⁰ Most commonly Non-Hodgkin's lymphoma.¹³

Organ transplant recipients are also at risk of cancer transmission. Each year 30,000 organ transplants are performed in the US.¹⁴ One study found, 0.04% of solid organ transplant recipients contract cancer from their donors. Most often it is melanoma; however, 1 in 200 solid organ transplants are at risk for transmission of Kaposi's sarcoma.¹⁰ The exact reason for the development of Kaposi's sarcoma is not known. Some speculate that immunosuppression following transplant allows Kaposi's sarcoma that was already present in the recipient to manifest and proliferate. It is also possible that live Kaposi's sarcoma cells are transferred from the donor or at least the Kaposi sarcoma-related herpesvirus (KSHV). One study found 5 of 8 organ donation recipients who later developed Kaposi's sarcoma had tumors with the same genetic markers as their donors.¹⁵ Interesting, the authors of this study suggest the use of donor-derived KSHV-specific T cells to control post-transplant Kaposi's sarcoma.

Simply because the donor has cancer, does not necessarily mean the recipient will develop cancer. Only one third of recipients of organ donations from cancer patients with contract their donor's cancer. There have been a number of reports which describe organ recipients developing the donor's cancer but later developing an immune response leading to tumor regression.¹⁰ A 2003 case study described transmission of a pancreatic cancer.¹⁶ In this case, a kidney and liver from a single donor were transplanted into two different recipients. Shortly after transplantation, it was discovered that the donor had asymptomatic pancreatic cancer. The liver recipient opted for removal and re-transplantation from a different donor, while the kidney recipient opted to keep the organ. On follow-up, no pancreatic cancer was found in the liver recipient but the kidney recipient died 15 months post-transplant with metastatic pancreatic cancer.

There are several documented cases of tumor allografts both deliberate and accidental. One such case involves an accidental needle stick.¹⁷ In 1986, while injecting laboratory mice, a 19-year-old researcher at the National Institutes of Health accidentally stuck her left hand with a needle that had previously contained a suspension of human colonic adenocarcinoma cells. Two week after the incident, a small nodule was noted at the site of the needle stick. Nineteen days after the incident the nodule was removed and revealed to be an adenocarcinoma consistent with the cell line used to inject the mice. No inflammatory response was noted leading the authors to speculate that, had the tumor been left alone, it would have progressed.

A second report case of tumor allographs was reported in 1996.¹⁸ During an emergency surgery to remove a malignant fibrous histiocytoma from the abdomen of a 32-year-old man, the 53-year-old surgeon injured his left palm while placing a drain. The lesion was immediately disinfected and dressed. Five months later, the surgeon presented with a 3 cm nodule on his left hand at the site of the injury. The lesion was removed and diagnosed as malignant fibrous

histiocytoma. Histologic analysis of tissues from the patient's tumor and the surgeon's hand revealed that the tumors were identical.

The final example of tumor transplantation occurred in 1961 when physicians at Northwestern University Medical School transplanted a small portion of a melanoma from a 50-year-old female into the abdomen of the patient's 80-year-old mother.¹⁹ These kind of studies were not unusual in the 1950s. Researchers at Sloan-Kettering Institute for cancer Research conducted several similar studies.²⁰ Shortly after the lesion was transplanted, the daughter passed away from a bowel perforation. The mother complained of a pulling sensation in the abdominal wall 22 days post-transplant. A wide excision did not reveal any evidence of melanoma. The abdominal pain persisted and 65 days post-transplant the mother was admitted to the hospital. Despite additional procedures, no cancer was found. A second hospital admission and abdominal surgery on the 86th day post-transplant revealed a large mass in the abdomen. The mother received several months of chemotherapy. On the 451st day post-transplant the mother expired. Post mortem examination revealed diffuse metastatic disease that was histologically indistinguishable from the daughter's tumor.

Certain animal cancers are contagious

First described in 1996, Devil Facial Tumor Disease (DFTD) has reduced the population of Tasmanian devils in the wild by 50% and 90% in certain regions of Tasmania.²¹ This has resulted in the devils being labeled an endangered species. DFTD is extremely aggressive and highly communicable. It is 100% fatal in 6 months due to airway obstructions and failure to feed. (Figures 4 and 5) DFTD is spread through direct transmission during physical contact with an infected devil during fighting and mating. Cytogenetic studies have confirmed the transplantation of a single cell line to all infected devils. Lack of genetic diversity has made the devils prone to cancers and is likely a factor in their inability to prevent transplanted tumor cells from proliferating. Researchers believed that they had found an individual (Cedric) who was immune to DFTD.¹⁰ Cedric and his half-brother, Clinky, were injected with live tumor cells. Clinky developed tumors and quickly died; however, Cedric did not develop tumors and instead developed tumor antibodies. Cedric was later injected with a slightly different strain of DFTD and developed tumors. Although disappointing, it does suggest that devils can be immune to one strain of DFTD but not all. If DFTD continue to spread at its present pace, researchers

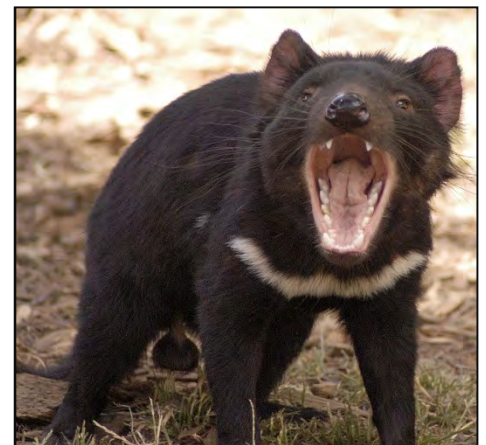


Figure 4: Healthy Tasmanian Devil



Figure 5: Devil with DFTD

believe there may be no devils left in the wild in 5 years and the species could be extinct in 20 years.²¹

Also known as Sticker's sarcoma, Canine Transmissible Venereal Tumor (CTVT) was first described in 1876.²² CTVT has been found in dogs, wolves, and coyotes in 6 continents. Histologic analysis revealed a common source for all tumors despite animal or continent. It is believed that CTVT originated in wolves 200 to 2,500 years ago, making it the oldest known malignant cell line. Malignant tumor cells are transplanted to healthy animals via physical contact with infect animals during mating, fighting or licking, biting, or sniffing tumor affected areas. Lesions present in the genitals, nose or mouth. (Figure 6) CTVT is non-fatal and animals typically produce an immune responses leading to spontaneous regression of lesions within a few months of presentation. After tumor regression, the animal gains lifelong immunity. Only 7% of dogs do not suppress the tumors, usually elderly or immunosuppressed animals.



Figure 6: Dog with CTVT

Conclusions

Is cancer contagious? Not exactly. However, in isolated incidents it is transmissible and certain carcinogens, specifically viruses, are contagious. In an effort to better answer this question researchers at the University of Vermont studied the potential of transmission of HPV positive neoplastic cells between sexual partners.²³ They based their assumption on the close connection between HPV in cervical and penile cancers and on animal models like DFTD and CTVT. In the study, cancer cells from 2 HPV positive penile cancers were fused with healthy tissues from female patients. They concluded; "This study did not find any evidence of interperson transmissible cervical or penile cancer supporting the improbability of such an occurrence. However, given the small sample size, the examples of CTVT and DFTD, and the HPV16-related diminution of the immune response, the potential for rare transmissible human anogenital cancer cannot be definitively discounted."²³ While human cancers may not be contagious now, the more important question may be whether cancer could evolve into a contagious condition. At a minimum, animal examples indicate that it is possible.

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