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The Beat Lives On

Almost 30 years after Bob Marley died of metastatic melanoma, new research is shedding light on the disease

By Sue Rochman

No one could have predicted that the music that mirrored and shaped the counterculture spirit of the 1970s would emerge from the Trench Town ghetto in Kingston, Jamaica. Yet that's where the rhythmic, body-rocking music known as reggae was both born and would find a worldwide messenger in the charismatic, dreadlocked Rastafarian Nesta Robert "Bob" Marley.

The son of a white English Jamaican father and an Afro-Jamaican mother, Marley was born on Feb. 6, 1945, in St. Ann Parish, Jamaica, and raised alongside the Jamaican struggle for independence. A Caribbean island that passed from Spanish to British rule, Jamaica remained controlled by others until 1962, when it achieved the right to self-governance.

By then, Marley was living in Trench Town, where he and his mother had moved after his father's death in 1955, spending his days in jam sessions with other young Jamaican musicians. As a teenager, Marley, along with Bunny Wailer and Peter Tosh, formed a ska and rocksteady band called the Teenagers.

As the Wailers, they recorded their first album, *Catch a Fire*, in 1972. By this time, the band had expanded to include backup vocalists known as the I-Threes—Rita Marley (Bob Marley's wife), Judy Mowatt and Marcia Griffiths.

In 1974, the group released the hit single "No Woman, No Cry." The next year, Peter Tosh and Bunny Wailer quit the band—leaving Bob Marley to recruit new musicians. But that didn't stop him. In 1976, the Bob Marley and the Wailers' album *Rastaman Vibration* hit the top 10 on the Billboard charts.

The world was ready for reggae, and reggae was ready for the world. "Reggae was two parts Jamaican popular music"—which, at the time, was ska and rocksteady—"and one part American pop, which was the music that was heard on the radio on the island," explains David Moskowitz, the author of the book *Bob Marley: A Biography* and a musicologist at the University of South Dakota in Vermillion. "It's a distinct rhythm hybrid that's slow enough so that the words don't get lost but fast enough to dance to." Importantly, he notes, it was also a counterculture product, with lyrics that celebrated the Rastafarian religion and its belief in marijuana as sacrament.

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The Melanoma Mnemonic

Keep an eye out for moles with these traits.



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Marley's stature as what Moskowitz calls "the first third-world superstar" crystallized in 1977 with the release of his album *Exodus*. (In 1999, *Time* magazine named it the best album of the 20th century.) An anthem of and for "Jah"-worshipping people breaking free from Babylon (white/Western society) and returning to the Fatherland (Africa/Zion), the lyrics were a meditation on perseverance and love. They embodied the Rastafarian dream of black power, African repatriation and freedom, and later were embraced by social and political movements of the 1970s and 1980s that have shaped society as we know it today.

Marley began the Exodus tour to promote the album in May 1977. Two months later, he decided to have a specialist take a look at a lingering sore on his toe that had become painful. Marley had thought of it as nothing more than a soccer-related injury—but he was wrong. It was a malignant melanoma.

The Melanocyte Story

An estimated 68,720 people will be diagnosed with melanoma this year in the U.S., and about 8,650 will die of the disease. Melanomas arise from melanocytes, cells located in the bottom layer of the skin's epidermis that are responsible for making pigment. Melanocytes also are found in mucosal areas, such as the eyes, vulva, anorectal area, and the inside of the nose, and melanomas can develop in these areas as well. Marley was diagnosed with an acral lentiginous melanoma; these develop in hairless areas, such as the palms of the hand, soles of the feet, and nailbed. It is widely believed that this type of melanoma is most likely to develop in blacks and Asians, but studies have shown that they actually occur at about the same rate across races.

It isn't surprising that Marley might have mistaken his melanoma for a simple sore. In the 1970s, there was significantly less awareness about skin cancer than there is today. And even now, says Vernon K. Sondak, a surgical oncologist who specializes in melanoma at the H. Lee Moffitt Cancer Center and Research Institute in Tampa, Fla., "Most people still don't think of dark-skinned people as being at risk for skin cancer, and probably even fewer think that a melanoma might occur under a toenail."

"Still to this day," he adds, "we have a hard time getting an early diagnosis when it's a non-classic melanoma, meaning that it is in an unusual location, has an unusual presentation, or is in an unusual patient."

Rastafarian Beliefs

Marley's doctor told him the best course of treatment would involve amputation of his toe, and possibly his foot. "Bob wouldn't go for that," says Garry Steckles, the author of the biography *Bob Marley: A Life*. "Part of the Rastafarian religion is that you don't have parts of your body amputated."



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Marley flew to Miami, where his mother was living, and sought a second opinion at Cedars of Lebanon (now the University of Miami Hospital). There, says Steckles, doctors removed some of the flesh from the melanoma and replaced it with a skin graft from his thigh. At the time, Marley was living with his girlfriend, Cindy Breakspeare. (A year earlier, she had been crowned Miss World; a year later, she would give birth to their son, Damian.)

By all accounts, says Steckles, Marley seemed to be doing well, and the band went back on the road. Watching Marley perform before the legions of fans who pressed themselves into crowded arenas, it was easy to believe that he had been cured. But, in reality, the cancer cells were still pumping away in his lymphatic system. He began having horrible headaches. And then, one day, while jogging with friends in Central Park, during the Wailers' 1980 Uprising tour, Marley collapsed. The cancer had metastasized to his brain.

Given that news, some might have withdrawn from public view. Marley took to the stage, until he no longer could, performing his last concert on Sept. 23, 1980, at the Stanley Theater in Pittsburgh. By then, the cancer had spread to his lungs and stomach as well. Marley's American oncologists told him there was nothing they could do to prolong his life, and like many other patients, before and since, he looked outside the country for hope. He flew to Bavaria in Germany, where he sought treatment from Josef Issels, a physician who claimed his special treatment could put advanced metastatic disease into remission. (The American Cancer Society discredited the Issels Treatment in 1972, but it continues to be sought out by people worldwide even today.) Marley spent five months at the clinic, but his condition continued to deteriorate. Ultimately, Steckles says, Issels told Marley's family there was nothing else he could offer. Marley flew to his mother's house in Miami. He was too weak to travel any further. He died on May 11, 1981, at age 36, at Cedars of Lebanon. A few days later, his body arrived home, in Jamaica.

A Surgical Advance

As when Marley was diagnosed, surgery remains an important treatment for melanoma, but in this area there has been one significant advance. "The biggest change in surgical management of melanoma, bar none," says Sondak, "was the move from complete lymph-node dissection to sentinel-node biopsy."

The sentinel-node technique was introduced in the early 1990s, and it is now the standard of care for staging and treating patients with localized melanoma who are at significant risk of having metastasis to their lymph nodes. It capitalizes on the knowledge that cancer typically spreads to the lymphatic system by first moving through one or two "sentinel" nodes. These are the nodes that the tumor drains into, so they are the first place cancer cells would appear in the lymphatic system. This means a surgeon needs to remove and test only these nodes to determine if cancer has spread.

Prior to the introduction of this technique, surgeons had two choices: Remove all of the nodes or, if the nodes did not appear swollen, leave them in and closely monitor the patient. (In Marley's case, if he had agreed to have surgery, this might have meant removing all of the lymph nodes in his groin.) Sentinel-node biopsy has decreased the side effects, like chronic pain, infection and lymphedema (a swelling of tissue, often in the limbs), that commonly follow

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lymph-node removal. It is also saving lives. Recent studies have shown that patients who undergo sentinel-node biopsy are less likely than those who take a traditional watch-and-wait approach to have a recurrence or die of their disease.

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Challenging Cells

Despite the numerous clinical trials that have tested new drugs or new drug combinations, only one chemotherapy drug, dacarbazine (DTIC-Dome), has been approved to treat melanoma that has metastasized, and even it is not often effective. "Dacarbazine only works in about 15 percent of patients," notes Gregory Daniels, a medical oncologist who coordinates the clinical program in melanoma at the University of California, San Diego. "And it has never been shown to extend survival."

Other systemic treatments for metastatic melanoma have also been studied, but most have been found to be ineffective or not as effective as dacarbazine. In the late 1980s, researchers began investigating whether the melanocytes would respond to immunotherapy. To date, investigators have identified interferon-alpha and interleukin-2 (IL-2) as the two most effective immunotherapy treatments. But as with dacarbazine, "most effective" is relative. Studies have shown response rates for IL-2 ranging from 8 percent to 22 percent, says Daniels adding, "while these biologic agents can delay recurrence in some patients, they rarely provide a cure."

This is why the melanoma field did a double take when oncologists at the Dana-Farber Cancer Institute in Boston reported in the *Journal of Clinical Oncology* in April 2008 that they had a patient with a rectal melanoma **whose tumors shrunk dramatically in response to imatinib (Gleevec)**. The drug blocks a protein, called kit, which is overproduced when the c-kit gene becomes defective. The investigators had decided to explore whether imatinib might be effective in melanoma after another research group reported it had found kit mutations in 21 percent of mucosal melanomas, 11 percent of acral melanomas, and 17 percent of melanomas arising in chronically sun-damaged skin, like that on the head and neck.

This finding has given researchers hope that they will now be able to offer some metastatic melanoma patients an effective treatment. "It's only a small number for whom it will be effective—maybe 300 to 600 patients in the U.S.," says Meenhard Herlyn, a biologist at the Wistar Institute, an independent biomedical research center in Philadelphia. "And of those, we hope we can cure half. But in melanoma, that is a major advance. It's the best new therapy that's been tested in the last 35 years—and it might have allowed us to cure Bob Marley."

What the Future Holds

Over the past decade, it has become increasingly apparent to melanoma researchers that there are different types of melanomas that are driven by different genetic mutations. These findings help explain why some melanomas arise from sun exposure, and others do not. They also make the next goal clear: finding and targeting, with agents like Gleevec, the genetic mutations that drive these different types of melanoma.

For now, though, early detection remains the only way to continue to increase survival rates. That's why it's critical, experts say, that both patients and physicians alike learn not only about the ABCDE mnemonic of melanoma detection (*see sidebar*), but about the types of melanomas that develop in darker-skinned people, like Marley.

Marley's music became even more popular after he died. He would undoubtedly be proud to know that his musical legacy lives on through his 10 children, three of whom—Ziggy, Damian and Stephen—are Grammy Award-winning artists. But he wouldn't have been surprised. "My music will go on forever," he once said. "Maybe it's a fool say that, but when me know facts me can say facts. My music will go on forever." **CR**

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