Spotlight on the Transformation of Metastatic Melanoma Care

Over the past four decades, research has significantly improved our understanding of metastatic melanoma – the most serious and life-threatening form of skin cancer¹.

Innovative new treatments are transforming the way we care for patients with this disease. While research must continue, take a look at how far we've come.

Mechanisms of Melanoma Uncovered		New Paradigms Emerge	
÷	Little is known about the molecular makeup; a link to sun exposure discovered ^{2,3}	70s Chemotherapy is the only treatment option; patients survive approximately 7 months ⁷	
	Sentinel lymph node biopsy is introduced to assess if melanoma has spread and to predict the risk for recurrence ³	90s Chemotherapy and interleukin-2 are treatment options for metastatic melanoma ⁸	
	Melanoma gene mutations are discovered prompting new areas of research ³	New guidance is issued to help doctors better assess melanoma and identify those at risk for developing advanced disease ³	GUIDELINES
50% BRAF	 Melanoma is diverse with >30 subtypes identified to date⁴ 7 genes identified as having 'driver' mutations that promote progression⁴ Select mutations include: BRAF: occurs in about 50% of all melanomas⁵ NRAS: occurs in about 20% of all melanomas⁴ KIT: seen more frequently in those that begin on the palms, soles of the feet, under the nails, and inside the mouth and areas of chronic sun exposure⁵ 	 In 2011, the FDA approves the first test to detect BRAF mutations⁹; BRAF testing is now recommended for patients with metastatic melanoma⁵ Treatment options include targeted therapy and immunotherapy^{7,12} Biomarkers have become important to help determine treatment options for metastatic melanoma¹⁰ 	
	Melanoma is one of the cancers with the highest frequency of	Patients are living three times longer than in the	3X



mutations, resulting in varied disease from person to person⁶



Precision oncology evolves our understanding of how cancer develops on a genomic level. We are committed to the discovery and development of broadly available therapies that improve the lives of patients with cancer, including metastatic melanoma and other cancers.

Learn more about innovations in precision oncology at www.NovartisOncology.com

REFERENCES

- 1. A Snapshot of Melanoma. National Cancer Institute. Available at: http://www.cancer.gov/research/progress/snapshots/melanoma. Accessed October 1, 2015.
- 2. Sekulic A, Haluska P, Miller AJ, et al. Malignant melanoma in the 21st century: the emerging molecular landscape. Mayo Clin Proc. 2008;83(7):825-846.
- 3. Progress Against Melanoma. American Society of Clinical Oncology (ASCO). Available at http://www.cancerprogress.net/timeline/melanoma. Accessed October 2, 2015.
- 4. Shtivelman E, Davies MQ, Hwu P, et al. Pathways and therapeutic targets in melanoma. Oncotarget. 2014;5(7):1701-1752.
- 5. Melanoma Skin Cancer. American Cancer Society. Available at: http://www.cancer.org/acs/groups/cid/documents/webcontent/003120-pdf.pdf. Accessed October 2, 2015.
- 6. Watson IR, Takahashi K, Futreal PA, et al. Emerging patterns of somatic mutations in cancer. Nat Rev Genet. 2013;14(10):703-718.
- 7. Kushnir I, Merimsky O. The evolution in melanoma treatment as a reflection of precision-oriented medicine. Oncol Lett. 2013;5(2):424-426.
- 8. O'Day S, Kim C, et al. Metastatic melanoma: chemotherapy to biochemotherapy. Cancer Control. 2002;9(1):31-38.
- 9. US Food and Drug Administration. http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm268241.htm. Accessed October 2, 2015.
- 10. Weinstein D, Leininger J, Hamby C, et al. Diagnostic and prognostic biomarkers in melanoma. J Clin Aesthet Dermatol. 2014;7(6):13-24.
- 11. O'Donoghue E, Kamel D, Hennessy B. Current Advances in Therapy for Metastatic Melanoma. Cancer Therapy Reviews. 2013;9(1): 8-23.
- 12. New Therapies Are Changing the Outlook for Advanced Melanoma. National Cancer Institute (NIH). Available at http://www.cancer.gov/types/skin/research/advanced-melanoma -therapies. Accessed October 2, 2015.

U NOVARTIS