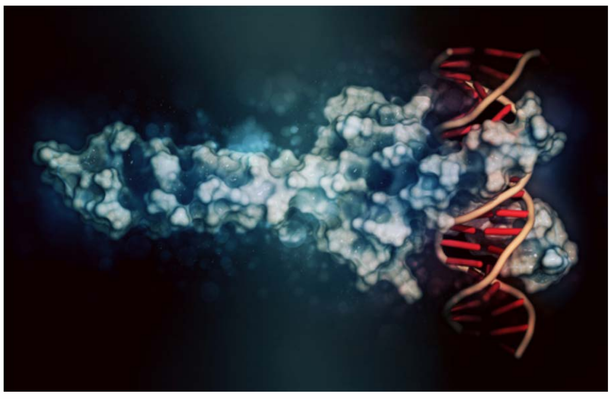
MYC and Cancer

The MYC family of proto-oncogenes encodes for three MYC oncoproteins: c-MYC, N-MYC and L-MYC.[1,2] c-MYC is ubiquitous in both fetal and adult proliferating cells, while N- and L-MYC are more limited. These proteins are transcription factors that activate a large number of genes – 15% of all genes are believed to be regulated by MYC proteins.[3] Cellular processes that are regulated by MYC include cell cycle, apoptosis, cell growth, differentiation, and metabolism.[4,5] Because of its importance in these areas, it is not surprising that >50% of solid tumors and leukemia feature deregulated MYC[6,7] and is, thus, an area of intense therapeutic interest.[8] Unfortunately, being transcription factors, MYC proteins have proven difficult to directly target. Indirectly targeting MYC transcription through inhibition of BRD4[9] and transcriptional cyclin dependent kinases[10,11] has been examined. Other indirect targets include MYC translation via inhibition of PI3K/Akt/mTOR pathway[12,13], the MYC-MAX complex that is required for DNA binding[14], MYC stability[15-17] and MYC mediated synthetic lethality[18-21].



3D rendering of cMyc-Max complex bound to DNA

MYC Transcription

- **JQ1:** BET Bromodomain Inhibitor
- **I-BET762:** BET Bromodomain Inhibitor
- **THZ1:** CDK7 Inhibitor
- **Roscovitine:** CDK7/9 Inhibitor
- **Flavopiridol:** CDK9 Inhibitor
- **Stauprimide:** NME2 Inhibitor

MYC Translation

- **Rapamycin:** mTORC1 Inhibitor
- **MK2206:** Akt Inhibitor
- **NVP-BEZ235:** PI3K/mTOR Inhibitor

MYC Stabilization

- **P22077:** USP7 inhibitor
- **Alisertib:** AurA inhibitor
- **BI2536:** Plk1 Inhibitor

MYC Activation

- **10058-F4:** Inhibits cMyc-Max association and function

Synthetic Lethality

- **Purvalanol:** pan-CDK inhibitor
- **CB-839:** Glutaminase Inhibitor
- **LY2603618:** Chk1 Inhibitor
- **Tozasertib:** AurA/B inhibitor

Complete list of MYC Reagents

If you don't see what you need - let us know and we can make it for you!

References:

1. Adhikary and Eilers (2005), Nat.Rev.Mol.Cell Biol. **6** 635
2. Dang (2012), Cell **149** 22
3. Dang *et al.* (2006), Semin.Cancer Biol. **16** 253
4. Bretones *et al.* (2015), Biochim.Biophys. Acta **1849** 506
5. Miller *et al.* (2012), Clin.Cancer Res. **18** 5546
6. Vita and Hendriksson (2006), Semin.Cancer Biol. **16** 318
7. Delgado and Leon (2010), Genes Cancer **1** 605
8. Chen *et al.* (2018), Signal Transduct.Target Ther. **3** 5
9. Mertz *et al.* (2014), Proc.Natl.Acad.Sci.USA **108** 16669
10. Kwiatkowski *et al.* (2014), Nature **511** 616
11. Garcia-Cuellar *et al.* (2014), Leukemia **28** 1427
12. Chapuis *et al.* (2010), Clin.Cancer Res. **16** 5424
13. Devlin *et al.* (2013), FEBS J. **280** 5307
14. Yin *et al.* (2003), Oncogene **22** 6151
15. Richards *et al.* (2016), PNAS **113** 13726
16. Xiao *et al.* (2016), Mol.Cell. **64** 493
17. Tavana *et al.* (2016), Nat.Med. **22** 1180
18. Goga *et al.* (2007), Nat.Med **13** 820
19. Xiao *et al.* (2015), Oncotarge **6** 40655
20. Ferrao *et al.* (2012), Oncogene **31** 1661
21. Yang *et al.* (2010), PNAS **107** 13836

Focus Biomolecules

400 Davis Dr. Suite 600
Plymouth Meeting, PA 19462 US
1-855-FOCUS21
Sales@focusbiomolecules.com