**Supplemental Digital Content. Table 1.** Ocular side effects of FDA-approved monoclonal antibodies1,2.

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| **Monoclonal Antibody** | **Brand name** | **Target** | **Primary indication** | **U.S. FDA****approval****year** | **Ocular side effects** |
| Infliximab  | Remicade  | TNF | Crohn disease  | 1998 | Optic neuritis; unexplained visual loss;  |
| Trastuzumab  | Herceptin  | HER2  | Breast cancer  | 1998 | Corneal erosion; corneal lesion; focal lesion of limbal conjunctiva; |
| Adalimumab  | Humira  | TNF | Rheumatoid arthritis  | 2002 | Optic neuritis; |
| Cetuximab  | Erbitux  | EGFR  | Colorectal cancer  | 2004 | Blepharitis; cicatricial ectropion; conjunctivitis; keratitis; eyelid madarosis; trichomegaly; |
| Bevacizumab  | Avastin  | VEGF | Colorectal cancer  | 2004 | Blurred vision; chemosis of conjunctiva; corneal edema; endophthalmitis; floaters in visual field; functional visual loss; keratitis; macular hole; macular infarction; retinal tear; toxic anterior segment syndrome |
| Natalizumab  | Tysabri  | a4 integrin  | Multiple sclerosis  | 2004 | Acute retinal necrosis; progressive outer retinal necrosis; |
| Panitumumab  | Vectibix  | EGFR  | Colorectal cancer  | 2006 | Conjunctivitis; excessive tear production; eye irritation; eyelash formation, growth; hyperemia of eye; keratitis; perforation of cornea; Trichomegaly |
| Ranibizumab  | Lucentis  | VEGF  | Macular degeneration  | 2006 | Blepharitis; cataract; conjunctival edema; conjunctival hemorrhage; conjunctival hyperemia; corneal abrasion; corneal edema; dry eye syndrome; endophthalmitis; eye irritation; foreign body sensation, in the eyes; hypotony of eye; injection site hemorrhage; conjunctival erosion; conjunctival retraction; iritis; leaking filtering bleb; pain in eye; raised intraocular pressure; reduced visual acuity; retinal detachment; retinal pigment epithelial detachment with tear of retinal pigment epithelium; secondary cataract; vitreous detachment; vitreous floaters; vitreous hemorrhage; |
| Certolizumab pegol  | Cimzia  | TNF  | Crohn disease  | 2008 | Demyelinating disease of central nervous system; oculomotor nerve demyelination; optic neuritis; retinal hemorrhage; uveitis; |
| Ustekinumab  | Stelara  | IL-12/23  | Psoriasis  | 2009 | Herpes zoster with ophthalmic complication |
| Golimumab  | Simponi  | TNF | Rheumatoid and psoriatic arthritis, ankylosing spondylitis  | 2009 | Optic neuritis |
| Tocilizumab | RoActemra, Actemra | IL-6R  | Rheumatoid arthritis  | 2010 | Nodular scleritis |
| Denosumab  | Prolia  | RANK-L  | Bone Loss  | 2010 | Bilateral cataracts |
| Ipilimumab  | Yervoy  | CTLA-4  | Metastatic melanoma  | 2011 | Blepharitis; blurred vision; choroidal retinal neovascularization; episcleritis; iritis; myasthenia gravis, ocular; ophthalmoplegia; orbital myositis; panuveitis; scleritis; sudden visual loss; uveitis; Vogt-Koyanagi-Harada disease |
| Ado-trastuzumab emtansine  | Kadcyla | HER2 | Breast cancer | 2012 | Blurred vision; conjunctivitis; corneal lesion; dry eyes; epiphora |
| Nivolumab  | Opdivo  | PD1 | Melanoma, non-small cell lung cancer  | 2014 | Blurred vision; iridocyclitis; iritis; myasthenia gravis, ocular; panuveitis; unexplained visual loss; uveitis; Vogt-Koyanagi-Harada disease |
| Pembrolizumab  | Keytruda  | PD1  | Melanoma  | 2014 | Corneal epithelial defect; decreased intraocular pressure; functional visual loss; iritis; myasthenia gravis, ocular; optic neuritis; uveitis;  |
| Alemtuzumab  | Lemtrada; MabCampath, Campath-1H  | CD52  | Multiple sclerosis; chronic myeloid leukemia | 2014  | Disorder of optic nerve; retinal pigment epithelial abnormality; thyroid eye disease |
| Necitumumab  | Portrazza  | EGFR  | Non-small cell lung cancer  | 2015 | Conjunctivitis |
| Dinutuximab  | Qarziba; Unituxin  | GD2  | Neuroblastoma  | 2015 | Blurred vision; photophobia; mydriasis; fixed or unequal pupils; optic nerve disorder; eyelid ptosis, and papilledema; neuroblastoma |
| Alirocumab  | Praluent  | PCSK9  | High cholesterol  | 2015 | Cataract |
| Elotuzumab  | Empliciti  | SLAMF7  | Multiple myeloma  | 2015 | Cataract |
| Ixekizumab |  Taltz | IL-17a  | Psoriasis  | 2016 | Conjunctivitis |
| Atezolizumab  | Tecentriq  | PD-L1  | Bladder cancer  | 2016 | Iritis; myasthenia gravis, ocular; uveitis; visual impairment; Vogt-Koyanagi-Harada disease |
| Brodalumab  | Siliq, LUMICEF  | IL-17R  | Plaque psoriasis  | 2017 | Conjunctivitis |
| Dupilumab  | Dupixent  | IL-4R α  | Atopic dermatitis  | 2017 | Blepharitis; conjunctivitis; dry eyes; itching of eye; keratitis |
| Avelumab  | Bavencio  | PD-L1  | Merkel cell carcinoma  | 2017 | Hemolytic anemia; iritis; myasthenia gravis, ocular; uveitis; visual impairment; Vogt-Koyanagi-Harada disease |
| Durvalumab  | IMFINZI  | PD-L1  | Bladder cancer  | 2017 | Iritis; myasthenia gravis, ocular; uveitis; visual impairment |
| Mogamulizumab | Poteligeo | CCR4 | Mycosis fungoides or Sézary syndrome | 2018 | Conjunctivitis |
| Cemiplimab | Libtayo | PD-1 | Cutaneous squamous cell carcinoma | 2018 | Iritis; uveitis; visual impairment; Vogt-Koyanagi-Harada disease |
| Moxetumomab pasudotox | Lumoxiti | CD22 | Hairy cell leukemia | 2018 | Bilateral cataracts; blurred vision; dry eyes; pain in eye; periorbital edema |
| Polatuzumab vedotin | Polivy | CD79b | Diffuse large B-cell lymphoma | 2019 | Blurred vision |
| Brolucizumab | Beovu | VEGF-A | Neovascular age-related macular degeneration | 2019 | Blurred vision; cataract; conjunctival hemorrhage; conjunctivitis; corneal abrasion; endophthalmitis; pain in eye; raised intraocular pressure; retinal detachment; retinal hemorrhage; retinal pigment epithelial tear; retinal vascular occlusion; retinal vasculitis; uveitis; vitreous detachment; vitreous floaters |
| Enfortumab vedotin | Padcev | Nectin-4 | Urothelial cancer | 2019 | Blurred vision; keratitis; blurred vision; limbal stem cell deficiency; dry eyes |
| fam-trastuzumab deruxtecan | Enhertu | HER2 | HER2+ metastatic breast cancer | 2019 | Dry eyes |
| Belantamab mafodotin | BLENREP | B-cell maturation antigen | Multiple myeloma | 2020 | Blurred vision; dry eyes; keratitis; photophobia; |
| Naxitamab | DANYELZA | GD2 | High-risk neuroblastoma and refractory osteomedullary disease | 2020 | Unequal pupils; blurred vision; visual impairment; accommodation disorder; photophobia; mydriasis |
| Dostarlimab | Jemperli | PD-1 | Endometrial cancer | 2021 | Iridocyclitis; iritis; unexplained visual loss; uveitis; Vogt-Koyanagi-Harada disease |
| Amivantamab | Rybrevant | EGFR, cMET | NSCLC w/ EGFR exon 20 insertion mutations | 2021 | Keratitis; uveitis |
| Tralokinumab | Adtralza | IL-13 | Atopic dermatitis | 2021 | Blepharitis; conjunctivitis; dry eyes; itching of eye; keratitis; |
| Tisotumab vedotin | TIVDAK | Tissue factor | Cervical cancer | 2021 | Blepharitis; conjunctivitis; dry eyes; keratitis; |

**TNF** - Tumour Necrosis Factor; **HER2** - Human Epidermal Growth Factor Receptor 2; **EGFR** - Estimated Glomerular Filtration Rate; **VEGF** - Vascular Endothelial Growth Factor; **IL** – Interleukin; **CTLA-4** - Cytotoxic T-Lymphocyte Associated Protein 4; **PD1** - Programmed Cell Death Protein 1; **CD52** - Cluster of Differentiation 52; **GD2** – Ganglioside 2; **PCSK9** - Proprotein convertase subtilisin/kexin type 9; **CCR4** - C-C Motif Chemokine Receptor 4; **cMET** - mesenchymal-epidermal transition (cMET) tyrosine kinase receptor;

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