# Read the first 50 lines of the file

> metadata\_lines <- readLines(file\_path, n = 50)

>

> # View the first few lines of metadata

> metadata\_lines

[1] "!Series\_title\t\"Asynchronous remodeling is a driver of failed regeneration in Duchenne muscular dystrophy\""

[2] "!Series\_geo\_accession\t\"GSE109178\""

[3] "!Series\_status\t\"Public on Jan 14 2018\""

[4] "!Series\_submission\_date\t\"Jan 14 2018\""

[5] "!Series\_last\_update\_date\t\"Sep 15 2020\""

[6] "!Series\_pubmed\_id\t\"25313409\""

[7] "!Series\_pubmed\_id\t\"32592467\""

[8] "!Series\_summary\t\"49 human patient mRNA profiles was generated using HG-U133 Plus 2.0 microarrays. Procesed in Affymetrix Expression console using Plier normalization method and later processed in Partek Genomics Suite. The clustering figure was generated using HCE clustering software.\""

[9] "!Series\_summary\t\"We sought to determine the mechanisms underlying failure of muscle regeneration that is observed in dystrophic muscle through hypothesis generation using muscle profiling data (human dystrophy and murine regeneration). We found that transforming growth factor β-centered networks strongly associated with pathological fibrosis and failed regeneration were also induced during normal regeneration but at distinct time points. We hypothesized that asynchronously regenerating microenvironments are an underlying driver of fibrosis and failed regeneration. We validated this hypothesis using an experimental model of focal asynchronous bouts of muscle regeneration in wild-type (WT) mice. A chronic inflammatory state and reduced mitochondrial oxidative capacity are observed in bouts separated by 4 d, whereas a chronic profibrotic state was seen in bouts separated by 10 d. Treatment of asynchronously remodeling WT muscle with either prednisone or VBP15 mitigated the molecular phenotype. Our asynchronous regeneration model for pathological fibrosis and muscle wasting in the muscular dystrophies is likely generalizable to tissue failure in chronic inflammatory states in other regenerative tissues.\""

[10] "!Series\_overall\_design\t\"These datasets contained profiles from 6 normal controls, 17 DMD (absence of dystrophin), 11 BMD (present but abnormal dystrophin), 7 LGMD2I (FKRP deficiency, a glycosylation defect), and 8 LGMD2B (DYSF). Patients had a broad range of ages, clinical severity of their disease, and histopathological findings, although all neuromuscular disease patients showed evidence of a dystrophic process (degeneration/regeneration of muscle fibers)\""

[11] "!Series\_type\t\"Expression profiling by array\""

[12] "!Series\_contributor\t\"Eric,P,Hoffman\""

[13] "!Series\_sample\_id\t\"GSM2934802 GSM2934803 GSM2934804 GSM2934805 GSM2934806 GSM2934807 GSM2934808 GSM2934809 GSM2934810 GSM2934811 GSM2934812 GSM2934813 GSM2934814 GSM2934815 GSM2934816 GSM2934817 GSM2934818 GSM2934819 GSM2934820 GSM2934821 GSM2934822 GSM2934823 GSM2934824 GSM2934825 GSM2934826 GSM2934827 GSM2934828 GSM2934829 GSM2934830 GSM2934831 GSM2934832 GSM2934833 GSM2934834 GSM2934835 GSM2934836 GSM2934837 GSM2934838 GSM2934839 GSM2934840 GSM2934841 GSM2934842 GSM2934843 GSM2934844 GSM2934845 GSM2934846 GSM2934847 GSM2934848 GSM2934849 GSM2934850 \""

[14] "!Series\_contact\_name\t\"mamta,,giri\""

[15] "!Series\_contact\_laboratory\t\"Hoffman Lab\""

[16] "!Series\_contact\_department\t\"Center for Genetic Medicine\""

[17] "!Series\_contact\_institute\t\"CNMC\""

[18] "!Series\_contact\_address\t\"111 Michigan Ave\""

[19] "!Series\_contact\_city\t\"DC\""

[20] "!Series\_contact\_state\t\"Washington. DC\""

[21] "!Series\_contact\_zip/postal\_code\t\"20010\""

[22] "!Series\_contact\_country\t\"USA\""

[23] "!Series\_supplementary\_file\t\"ftp://ftp.ncbi.nlm.nih.gov/geo/series/GSE109nnn/GSE109178/suppl/GSE109178\_RAW.tar\""

[24] "!Series\_platform\_id\t\"GPL570\""

[25] "!Series\_platform\_taxid\t\"9606\""

[26] "!Series\_sample\_taxid\t\"9606\""

[27] "!Series\_relation\t\"BioProject: https://www.ncbi.nlm.nih.gov/bioproject/PRJNA429970\""

[28] ""

[29] "!Sample\_title\t\"Asynchronous remodeling in DMD (MIDO-BMD\_Pos-10UP)\"\t\"Asynchronous remodeling in DMD (MIDO-BMD\_Pos-11UP)\"\t\"Asynchronous remodeling in DMD (MIDO-BMD\_Pos-12UP)\"\t\"Asynchronous remodeling in DMD (MIDO-BMD\_Pos-14UP)\"\t\"Asynchronous remodeling in DMD (MIDO-BMD\_Pos-15UP)\"\t\"Asynchronous remodeling in DMD (MIDO-BMD\_Pos-1UP)\"\t\"Asynchronous remodeling in DMD (MIDO-BMD\_Pos-3UP)\"\t\"Asynchronous remodeling in DMD (MIDO-BMD\_Pos-4UP)\"\t\"Asynchronous remodeling in DMD (MIDO-BMD\_Pos-6UP)\"\t\"Asynchronous remodeling in DMD (MIDO-BMD\_Pos-7UP)\"\t\"Asynchronous remodeling in DMD (MIDO-BMD\_Pos-8UP)\"\t\"Asynchronous remodeling in DMD (MIDO-CTRL\_Pos-1UP)\"\t\"Asynchronous remodeling in DMD (MIDO-CTRL\_Pos-2UP)\"\t\"Asynchronous remodeling in DMD (MIDO-CTRL\_Pos-3UP)\"\t\"Asynchronous remodeling in DMD (MIDO-CTRL\_Pos-4UP)\"\t\"Asynchronous remodeling in DMD (MIDO-CTRL\_Pos-5UP)\"\t\"Asynchronous remodeling in DMD (MIDO-CTRL\_Pos-6UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-10UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-11UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-12UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-13UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-14UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-15UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-16UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-17UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-1UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-2UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-3UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-4UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-5UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-6UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-7UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-8UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DMD\_Pos-9UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DYS\_Neg-5UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DYS\_Pos-2UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DYS\_Pos-3UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DYS\_Pos-4UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DYS\_Pos-5UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DYS\_Pos-6UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DYS\_Pos-8UP)\"\t\"Asynchronous remodeling in DMD (MIDO-DYS\_Pos-9UP)\"\t\"Asynchronous remodeling in DMD (MIDO-FKRP\_Pos-2UP)\"\t\"Asynchronous remodeling in DMD (MIDO-FKRP\_Pos-3UP)\"\t\"Asynchronous remodeling in DMD (MIDO-FKRP\_Pos-5UP)\"\t\"Asynchronous remodeling in DMD (MIDO-FKRP\_Pos-6UP)\"\t\"Asynchronous remodeling in DMD (MIDO-FKRP\_Pos-7UP)\"\t\"Asynchronous remodeling in DMD (MIDO-FKRP\_Pos-8UP)\"\t\"Asynchronous remodeling in DMD (MIDO-FKRP\_Pos-9UP)\""

[30] "!Sample\_geo\_accession\t\"GSM2934802\"\t\"GSM2934803\"\t\"GSM2934804\"\t\"GSM2934805\"\t\"GSM2934806\"\t\"GSM2934807\"\t\"GSM2934808\"\t\"GSM2934809\"\t\"GSM2934810\"\t\"GSM2934811\"\t\"GSM2934812\"\t\"GSM2934813\"\t\"GSM2934814\"\t\"GSM2934815\"\t\"GSM2934816\"\t\"GSM2934817\"\t\"GSM2934818\"\t\"GSM2934819\"\t\"GSM2934820\"\t\"GSM2934821\"\t\"GSM2934822\"\t\"GSM2934823\"\t\"GSM2934824\"\t\"GSM2934825\"\t\"GSM2934826\"\t\"GSM2934827\"\t\"GSM2934828\"\t\"GSM2934829\"\t\"GSM2934830\"\t\"GSM2934831\"\t\"GSM2934832\"\t\"GSM2934833\"\t\"GSM2934834\"\t\"GSM2934835\"\t\"GSM2934836\"\t\"GSM2934837\"\t\"GSM2934838\"\t\"GSM2934839\"\t\"GSM2934840\"\t\"GSM2934841\"\t\"GSM2934842\"\t\"GSM2934843\"\t\"GSM2934844\"\t\"GSM2934845\"\t\"GSM2934846\"\t\"GSM2934847\"\t\"GSM2934848\"\t\"GSM2934849\"\t\"GSM2934850\""

[31] "!Sample\_status\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\"\t\"Public on Jan 14 2018\""

[32] "!Sample\_submission\_date\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\"\t\"Jan 14 2018\""

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[34] "!Sample\_type\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\"\t\"RNA\""

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[36] "!Sample\_source\_name\_ch1\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\"\t\"vastus lateralis\""

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[38] "!Sample\_characteristics\_ch1\t\"age: 8\"\t\"age: 12.7\"\t\"age: 6.4\"\t\"age: 5.8\"\t\"age: 60.8\"\t\"age: 11\"\t\"age: 37.6\"\t\"age: 43\"\t\"age: 2.5\"\t\"age: 20\"\t\"age: 12.2\"\t\"age: NA\"\t\"age: NA\"\t\"age: NA\"\t\"age: NA\"\t\"age: NA\"\t\"age: NA\"\t\"age: 7\"\t\"age: 0.9\"\t\"age: 4\"\t\"age: 1.6\"\t\"age: 4\"\t\"age: 8\"\t\"age: 5\"\t\"age: 6\"\t\"age: 1.9\"\t\"age: 4\"\t\"age: 3\"\t\"age: 3\"\t\"age: 1.9\"\t\"age: 1\"\t\"age: 2\"\t\"age: 3.5\"\t\"age: 7\"\t\"age: NA\"\t\"age: 28\"\t\"age: 16\"\t\"age: 31\"\t\"age: 19\"\t\"age: NA\"\t\"age: 20\"\t\"age: 12\"\t\"age: 16\"\t\"age: 12\"\t\"age: 40\"\t\"age: 22\"\t\"age: 10\"\t\"age: 6\"\t\"age: 31\""

[39] "!Sample\_characteristics\_ch1\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\"\t\"tissue: vastus lateralis\""

[40] "!Sample\_characteristics\_ch1\t\"pathology: mild\"\t\"pathology: moderate\"\t\"pathology: severe\"\t\"pathology: severe\"\t\"pathology: mild\"\t\"pathology: mild\"\t\"pathology: mild\"\t\"pathology: moderate\"\t\"pathology: mild\"\t\"pathology: mild\"\t\"pathology: moderate\"\t\"pathology: NA\"\t\"pathology: NA\"\t\"pathology: NA\"\t\"pathology: NA\"\t\"pathology: NA\"\t\"pathology: NA\"\t\"pathology: severe\"\t\"pathology: moderate\"\t\"pathology: severe\"\t\"pathology: severe\"\t\"pathology: moderate\"\t\"pathology: moderate\"\t\"pathology: severe\"\t\"pathology: severe\"\t\"pathology: severe\"\t\"pathology: severe\"\t\"pathology: severe\"\t\"pathology: severe\"\t\"pathology: severe\"\t\"pathology: moderate\"\t\"pathology: severe\"\t\"pathology: severe\"\t\"pathology: severe\"\t\"pathology: mild\"\t\"pathology: mod\"\t\"pathology: mild\"\t\"pathology: severe\"\t\"pathology: mild\"\t\"pathology: severe\"\t\"pathology: mild\"\t\"pathology: mild\"\t\"pathology: moderate\"\t\"pathology: mild\"\t\"pathology: severe\"\t\"pathology: mild\"\t\"pathology: mild\"\t\"pathology: mild\"\t\"pathology: mild\""

[41] "!Sample\_characteristics\_ch1\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: NA\"\t\"Sex: NA\"\t\"Sex: NA\"\t\"Sex: NA\"\t\"Sex: NA\"\t\"Sex: NA\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: Male\"\t\"Sex: F\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: F\"\t\"Sex: F\"\t\"Sex: F\"\t\"Sex: M\"\t\"Sex: F\"\t\"Sex: F\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: F\"\t\"Sex: M\"\t\"Sex: M\"\t\"Sex: F\""

[42] "!Sample\_characteristics\_ch1\t\"mutation: Deletion Exons 45-48\"\t\"mutation: Deletion Exons 5-9\"\t\"mutation: Deletion Exon 49\"\t\"mutation: Deletion Exons 61-79\"\t\"mutation: Duplication Exons 51-55\"\t\"mutation: Deletion Exons 48-49\"\t\"mutation: Deletion Exons 45-47\"\t\"mutation: Deletion Exons 45-47\"\t\"mutation: Deletion Exons 45-53\"\t\"mutation: Deletion Exons 45-47\"\t\"mutation: Deletion Exons 13-41\"\t\"mutation: NA\"\t\"mutation: NA\"\t\"mutation: NA\"\t\"mutation: NA\"\t\"mutation: NA\"\t\"mutation: NA\"\t\"pathology note: Description: nice biopsy, severe mid/end stage dystrophy, very extensive fibrosis (endomysial, perimysial). A strange large fibrotic blood vessel with a second fibrotic blood vessel inside of it? Fiber size variation, rounded fibers, failed regeneration\"\t\"pathology note: Description: nice biopsy, young child with DYSTROPHIC process, central nuclei, fiber size variation\"\t\"mutation: Exon 3-6 deletion\"\t\"pathology note: Description: good condition. It showed fiber size variation, many hypercontracted fibers, cells with central nuclei, numerous areas of active regeneration and several necrotic fibers, mid stage dystrophy\"\t\"pathology note: nice biopsy, although some freeze artefact. early stage DMD with focal grouped necrosis, some fiber size variation but little fibrosis, young child\"\t\"mutation: Duplication\"\t\"pathology note: Description: nice biopsy, severe dystrophy, fiber size variation, necrosis, fibrosis\"\t\"pathology note: Description: nice biopsy, severe dystrophy, endomysial fibrosis, degen/regen, fiber size variation.\"\t\"pathology note: nice biopsy, DMD like, degen/regen, endomysial fibrosis\"\t\"pathology note: Description: nice biopsy, severe dystrophy, considerable inflammation/necrosis.\"\t\"pathology note: Description: Very nice biopsy, fiber size variation, several necrotic fibers and large areas of grouped regeneration, numerous central nuclei, one large area of all rounded fibers, mid stage dystrophy\"\t\"pathology note: nice biopsy, severe dystropy, fiber size variation, necrotic fibers, regeneration\"\t\"mutation: Duplication\"\t\"pathology note: Description: very nice biopsy, fiber size variation, hypercontracted fibers, cells with central nuclei, small areas of active regen and necrosis, ealry stage dystrophy\"\t\"pathology note: Description: nice biopsy, small rounded fibers with frequent central nuclei, increased endomysial fibrosis, several areas of focal inflammation, necrotic cells, degeneration, early stage dystrophy\"\t\"mutation: Exon 6-16 deletion\"\t\"mutation: Duplication\"\t\"mutation: Mutaion found by exome seq\"\t\"mutation: 1 found\"\t\"mutation: 2 found\"\t\"mutation: 2 found\"\t\"mutation: 2 found\"\t\"mutation: 2 found\"\t\"mutation: 1 found\"\t\"mutation: 1 found\"\t\"mutation: p.Leu276Ile\"\t\"mutation: p.Leu276Ile\"\t\"mutation: p.Arg143Ser\"\t\"mutation: p.Arg143Ser\"\t\"mutation: p.Arg143Ser\"\t\"mutation: p.Leu276Ile\"\t\"mutation: p.Leu276Ile\""

[43] "!Sample\_characteristics\_ch1\t\"pathology note: nice biopsy, relatively static mild myopathy, some fiber size variation\"\t\"pathology note: Very little muscle in biopsy, few focal regions of poorly preserved, atrophic fibers\"\t\"pathology note: biopsy OK, varying fiber orientation, considerable endomysial fat, central nuclei, isolated areas of degen/regen\"\t\"pathology note: Biopsy not great, freeze artefact, mid stage DUchenne?\"\t\"pathology note: nice biopsy, mild dystrophy with many central nuclei. Not much endomysial fibrosis, but more extensive perimysial fibrosis/fatty replacement. No overt degeneration.\"\t\"pathology note: nice biopsy; very mild dystrophy; some fiber size variation; few focal areas have increased fibrosis\"\t\"pathology note: excellent condition. It showed fiber size variation, mild fibrosis, numerous central nuclei, 1-2 hypercontracted fibers, and a few small areas of regeneration. This pathology is characteristic of an early stage dystrophy\"\t\"pathology note: Nice biopsy. Large fiber size variation. Splitting and central nuclei.Lobulated fibers.Increase in both endo and perymisial connective. Some adipose infiltraction. End stage dystrophy.\"\t\"pathology note: nice biopsy, variable endomysial fibrosis, many hypercontracted fibers, central nuclei, early stage DYSTROPHIC\"\t\"pathology note: nice biopsy, variable endomysial fibrosis, many hypercontracted fibers, central nuclei, early stage DYSTROPHIC\"\t\"pathology note: Good (#2 Description: Myopathic, 2nd: nice biopsy, fiber size variation, variable fibrosis, minor fatty replacement, numerous central nuclei, areas of degen/regen\"\t\"pathology note: NA\"\t\"pathology note: NA\"\t\"pathology note: NA\"\t\"pathology note: NA\"\t\"pathology note: NA\"\t\"pathology note: NA\"\t\"\"\t\"\"\t\"pathology note: nice biopsy, dystrophic, fiber size variation, degen/regen, focal fatty infiltration and fibrosis, many fascicles with little or no endomysial fibrosis\"\t\"\"\t\"\"\t\"pathology note: nice biopsy, fiber size variation, endomysial fibrosis. looks relatively mild for DMD with larger fibers with less endomysial fibrosis than typical\"\t\"\"\t\"\"\t\"\"\t\"\"\t\"\"\t\"\"\t\"pathology note: Description: very nice biopsy, variation in fiber size and several hypercontracted or centrally nucleated fibers. We also found focal fatty replacement and many areas of attempted regeneration, characteristic of an early stage dystrophy\"\t\"\"\t\"\"\t\"pathology note: Description: nice biopsy, tons of hypercontracted fibers, atrophic fibers, size variation, central nuclei, early/mid stage dystrophy, endomysial fibrosis, lots of nerve\"\t\"pathology note: Description: nice biopsy, mid stage severe dystrophy, fiber size variation, endomysial fibrosis, fiber size variation, failed regeneration\"\t\"pathology note: Nice biopsy, although artifactual space between fibers. Mild dystrophy/myopathy. Mild fiber size variation, few central nuclei.\"\t\"pathology note: nice biopsy, dysferlin-like with inflammation (both vascular, endomysial, and necrotic fibers). many fibers with infiltrating cells; great for a pathology study of inflammatory cells types.\"\t\"pathology note: mild dystrophic, about 20% of fibers with central nuclei, some fiber size variation, very mild focal increase in endomysial connective tissue. Occassional overt necrotic fibers, some inflammation both in perimysium and p\"\t\"pathology note: nice biopsy, large amount of fat, fiber size variation and central nuclei, many areas of degeneration and regeneration, mid/end stage DYSTROPHIC\"\t\"pathology note: Biopsy good, but not terrific. Some freeze artefact, fiber size variation, mild moderate fibrosis, some regenerating fibers, but no overt necrosis\"\t\"pathology note: nice biopsy, considerable fatty replacement, remaining fascicles show a DYSTROPHIC picture.\"\t\"pathology note: nice biopsy, many isolated necrotic fibers in\"\t\"pathology note: mild chronic dystrophy, freeze artefact\"\t\"pathology note: Description: 1rst biopsy inadequate; 2nd nice, quite focal, some severe with failed regen, some mild, focal fibrosis, manifesting carrier like\"\t\"pathology note: Nice biopsy, normal skeletal muscle; perhaps very slight fiber size variation\"\t\"pathology note: Biopsy largely replaced by fibrofatty tissue, isolated groups of 3-10 fibers remaining, which look myopathic; all type I fibers\"\t\"pathology note: diffuse endomysial inflammation, may be eosinophilic inclusions, little over degen/regen\"\t\"pathology note: biopsy shows considerable preservation artefact, relatively mild pathology?\"\t\"pathology note: Nice biopsy, very mild myopathy, some hypercontracted fibers, slight fiber size variation, mild increase in central nuclei\"\t\"pathology note: biopsy eh, freeze artefact, dessication; mild dystrophy?\""

[44] "!Sample\_molecule\_ch1\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\"\t\"total RNA\""

[45] "!Sample\_extract\_protocol\_ch1\t\"Biopsies were taken generally at the time of diagnosis and were typically from the vastus lateralis\"\t\"Biopsies were taken generally at the time of diagnosis and were typically from the vastus lateralis\"\t\"Biopsies were taken generally at the time of diagnosis and were typically from the vastus lateralis\"\t\"Biopsies were taken generally at the time of diagnosis and were typically from the vastus lateralis\"\t\"Biopsies were taken generally at the time of diagnosis and were typically from the vastus lateralis\"\t\"Biopsies were taken generally at the time of diagnosis and were typically from the vastus lateralis\"\t\"Biopsies were taken generally at the time of diagnosis and were typically from the vastus lateralis\"\t\"Biopsies were taken generally at the time of diagnosis and were typically from the vastus lateralis\"\t\"Biopsies were taken generally at the time of diagnosis and were typically from the vastus lateralis\"\t\"Biopsies were 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taken generally at the time of diagnosis and were typically from the vastus lateralis\"\t\"Biopsies were taken generally at the time of diagnosis and were typically from the vastus lateralis\""

[46] "!Sample\_extract\_protocol\_ch1\t\"RNA was isolated using standard Trizol reagent and methods, and quality of RNA was assessed by gel electrophoresis and/or Agilent Bioanalyzer\"\t\"RNA was isolated using standard Trizol reagent and methods, and quality of RNA was assessed by gel electrophoresis and/or Agilent Bioanalyzer\"\t\"RNA was isolated using standard Trizol reagent and methods, and quality of RNA was assessed by gel electrophoresis and/or Agilent Bioanalyzer\"\t\"RNA was isolated using standard Trizol reagent and methods, and quality of RNA was assessed by gel electrophoresis and/or Agilent Bioanalyzer\"\t\"RNA was isolated using standard Trizol reagent and methods, and quality of RNA was assessed by gel electrophoresis and/or Agilent Bioanalyzer\"\t\"RNA was isolated using standard Trizol reagent and methods, and quality of RNA was assessed by gel electrophoresis and/or Agilent Bioanalyzer\"\t\"RNA was isolated using standard Trizol reagent and methods, and quality of 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Trizol reagent and methods, and quality of RNA was assessed by gel electrophoresis and/or Agilent Bioanalyzer\"\t\"RNA was isolated using standard Trizol reagent and methods, and quality of RNA was assessed by gel electrophoresis and/or Agilent Bioanalyzer\""

[47] "!Sample\_label\_ch1\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\"\t\"Biotin\""

[48] "!Sample\_label\_protocol\_ch1\t\"Ten micrograms of total RNA was then reverse-transcribed into double stranded cDNA using a T7-oligo-dT primer, and cRNA was produced using two biotinylated nucleotide precursors. A 4-fold amplification of starting material (total RNA) to biotinylated cRNA was set as the minimum threshold for continuing with microarray hybridizations\"\t\"Ten micrograms of total RNA was then reverse-transcribed into double stranded cDNA using a T7-oligo-dT primer, and cRNA was produced using two biotinylated nucleotide precursors. A 4-fold amplification of starting material (total RNA) to biotinylated cRNA was set as the minimum threshold for continuing with microarray hybridizations\"\t\"Ten micrograms of total RNA was then reverse-transcribed into double stranded cDNA using a T7-oligo-dT primer, and cRNA was produced using two biotinylated nucleotide precursors. 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[50] "!Sample\_hyb\_protocol\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\"\t\"hybridized to Affymetrix microarrays,\""

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