Adam     Ages and graphic     Chard body Set     Terrent frant     All     All<	Driver	Driver Full	Site of Expression	Inducible	Knockout/Reporter	Phenotype	Reference
Anne     guardo     Doctogen     Participant     Repair Partic	Acan	aggrecan	Chondrocytes	Tamoxifen	Ai9		(Hu et al., 2017)
Acat genes	Acan	aggrecan	Chondrocytes	Tamoxifen	EGFP; LacZ; Tomato	Aggrecan-positive chondrocytes give rise to osteoblasts/osteocytes	(Zhou et al., 2014)
Alze opposed Barbon     apple some proposed biological biologi	Acan	aggrecan	Chondrocytes	Tamoxifen	RBPjk	NOTCH signaling is not essential in differentiated osteoblasts and	(Wang et al.)
Bickly model production decody of the statistic statistatistic statisti statistic sta	Acta2	alpha Smooth Muscle Actin	Myofibroblasts				
BDUR (0) (0) (0) (0) (0) (0) (0) (0) (0) (0)		adiponectin	Adipocytes			No Fracture Data	(Ambrosi et al., 2017)
Default     press for decade and pre	. ,	protein (Osteocalcin)			-	·	
Closes Consequences<	. ,	protein (Osteocalcin)				bone formation	
GMa Glain differentiation differentiatin differentiatin differentiation differentiation differen	CAGG		Ubiquitous	Tamoxifen	PDGFRβ		(Tokunaga et al., 2008)
Child Consignation of a provide minimal promoter Colligan, by 1, alpha-1 Childwales Consignation of a consistence of a provide minimal provem minimal provide minimal provide minimal provide minim		Cathepsin K	Osteoclasts			Decreased engraftment of fracture by osteochondral progenitor cells	(Jacome-Galarza et al., 2014)
Chilago     Collago     Collago     Construction from the constructin	CD45	Cluster of differentiation 45	Hematopoietic cells		Z/RED	Hematopoietic cells do not contribute to osteogenesis in fracture healing	(Otsuru et al., 2017)
Contra 1.2.3     Cologen, type 1, abha-1     Obsolution     Cologen, type 1, abha-1     Obsolution     Series obsolution     Series obsolution       Cologen, type 1, abha-1     Obsolution     Obsolution     Series obsolution	CMV	Cytomegalovirus minimal promoter	Ubiquitous		Rosa26 LacZ	MSC contributed to the callus initiation by expressing BMP-2	(Granero-Moltó et al., 2009)
ChalaColage, yeb, she handOutsideFor additional set of the hand hand hand of the hand hand of the hand hand hand hand hand hand hand hand	Col10a1		-		EGFP; LacZ; Tomato	Collagen 10-positive chondrocytes give rise to osteoblasts/osteocytes	(Zhou et al., 2014)
Caling Colume (ps) name (ps) name (ps) name (ps) (ps) name (ps) (ps) (ps) (ps) (ps) (ps) (ps) (ps)	Col1a1 2.3	Collagen, type 1, alpha-1	Osteoblasts		IGFR	Increased osteoclasts in early healing; impaired angiogenesis;	(Wang et al., 2015)
Charlas     Collegation year 1, when 4     Collegation year 1	Col1a1 2.3	Collagen, type 1, alpha-1	Osteoblasts		mT/mG		(Stiers et al., 2017)
Clair 3.2 Clair 3.2 Clair 3.2 Clair 3.3 Clair 3.4ObeloadiesTaroxife Amodel Bane 2 Main 2Minicipation constraint cons	Col1a1 2.3	Collagen, type 1, alpha-1	Osteoblasts		Nf1	Increased activation of Ras/MAPK pathway; inhibited mineralization	(Sharma et al., 2013)
Clair 32 Clair 32 Clair 32 Clair 32 Clair 34 Clair 34 Cl	Col1a1 2.3	Collagen, type 1, alpha-1	Osteoblasts		R26R	Majority of soft callus cells are derived from MSC	(Murao et al., 2013)
Clair 3.0 Colign, ype 1, apha-1 Oaksbasis Bmp2 Modifierence basismity on international reacting sent ymb2, and incodud mice during sent ymb2, and incodu mice during s	Col1a1 3.2		Osteoblasts	Tamoxifen	mT/mG	Highly driven during fracture repair	(Stiers et al., 2017)
Collage     Collage <t< td=""><td>Col1a1 3.6</td><td></td><td>Osteoblasts</td><td></td><td>Bmp2</td><td></td><td>(Mi et al., 2013)</td></t<>	Col1a1 3.6		Osteoblasts		Bmp2		(Mi et al., 2013)
Collagen, type 1, alpha-1 Osteoliasts SRG Mignity of fait callus cells are derived from MSC (Micro et al., 2013)   Collagen, type 1, alpha-1 Celobilasts Sno Inhibited etcoloast differentiation, derives aread fraiture minitation (Chen et al., 2017)   Collagen, type 1, alpha-1 Celobilasts Tamodfen All Collagen, type 1, alpha-1 (Chen et al., 2017)   Collagen, type 2, alpha-1 Condrocytes Tamodfen All Collagen, type 1, alpha-1 (Sene et al., 2017)   Collagen, type 2, alpha-1 Condrocytes Tamodfen All Collagen, type 2, alpha-1 (Mie et al., 2017)   Collagen, type 2, alpha-1 Condrocytes Tamodfen Brag2 Initiation of recombination without advision of ChecTR2 system (Mie et al., 2014)   Collagen, type 2, alpha-1 Condrocytes Tamodfen Brag2 Initiation of recombination without advision of recentr2 system (Mie et al., 2014)   Collagen, type 2, alpha-1 Condrocytes Tamodfen Macrophage No Fracture Data (Mie et al., 2014)   Collagen, type 2, alpha-1 Collagen, type 2, alpha-1 Collagen, type 2, alpha-1 Osteolostis (Mie et al., 2014)   Collagen, type 2, alpha-1 Collagen, type 2, alpha-1<	Col1a1 3.6	Collagen, type 1, alpha-1	Osteoblasts		Cx43		(Loiselle et al., 2013)
Cla13 Collaps	Col1a1 3.6	Collagen, type 1, alpha-1	Osteoblasts		R26R		(Murao et al., 2013)
Collagen, fyre 2, alpha-1   Chondrocytes   Tamoxifen   AB   Collagen, tyre 2, alpha-1   Chondrocytes   (het al., 2017)     Collagen, tyre 2, alpha-1   Chondrocytes   Tamoxifen   AB   Induction of recombination without aluation of CreER12 system   Seline et al., 2013)     Collagen, tyre 2, alpha-1   Chondrocytes   Tamoxifen   Bmp2   Inhibited osteogenesis; delayed mieralization   (Met al., 2013)     Collagen, tyre 2, alpha-1   Chondrocytes   Tamoxifen   Bmp2   Inhibited osteogenesis; delayed mieralization   (Met al., 2013)     Collagen, tyre 2, alpha-1   Chondrocytes   Tamoxifen   Bmp2   Inhibited osteogenesis; delayed mieralization   (Met al., 2013)     Collagen, tyre 2, alpha-1   Chondrocytes   Tamoxifen   Bmp2   Inhibited osteogenesis; delayed mieralization   (Met al., 2017)     Collagen, tyre 2, alpha-1   Chondrocytes   Tamoxifien   Tamoxifien   Bmp2   Inhibited osteogenesis; delayed mieralization   (Met al., 2017)     Collagen, tyre 2, alpha-1   Chondrocytes   Tamoxifien   Tamoxifien   Info   Info   (Leg al., 2017)     Collagen, tyre 2, alpha-1   Osteochordrocellular cells   Tamoxifien   Tamoxifien   Info   Info   In	Col1a1 3.6	Collagen, type 1, alpha-1	Osteoblasts		Smo	Inhibited osteoblast differentiation; decreased fracture mineralization	(Baht et al., 2014)
Cd2a1Collagen, Lyoe 2, alpha-1ChondrocytesChondrocytesAmoxfenAlPCollagen, Lyoe 2, alpha-1ChondrocytesChondrocy	Col1a1 3.6	Collagen, type 1, alpha-1	Osteoblasts		β-catenin	Inhibited fracture bridging; decreased mineralization	(Chen et al., 2007)
Cd21Claigen, type 2, alpha-1ChondrogiesTamoxifenAl9Induction of conception and involved activation of CeERT2 system(Seline et al., 2015)Col21Collagen, type 2, alpha-1ChondrogiesTamoxifenBmp2Inhibited osteopresis; delayed inineralization(Met al., 2014)Col21Collagen, type 2, alpha-1ChondrogiesTamoxifenBmp2Inhibited osteopresis; delayed inineralization(Met al., 2014)Col21Collagen, type 2, alpha-1ChondrogiesChondrogiesmarchages and dendrific cellsmarchages and dendrific cells(Met al., 2017)ClaskCalpenin Karophage Fas-Induced Apoptosis (Marci)ChondrogiesTamoxifenNTmGNo Fracture DataClaskCalpenin Matrix addic phosphoprotein 1OsteoclassTamoxifenNo Fracture DataNo Fracture DataDmp1Dentin matrix addic phosphoprotein 1OsteoclassTamoxifen on alpha, interferon belaNo Fracture DataIncreased inineralization, bone area; decreased chondrogenesis and increased in the matrix addic phosphoprotein 1OsteoclassIncreased inineralization, bone area; decreased chondrogenesis and increased in the matrix baddic phosphoprotein 1OsteoclassIncreased inineralization, bone area; decreased chondrogenesis and increased in the matrix baddic phosphoprotein 1OsteoclassIncreased inineralization, bone area; decreased chondrogenesis and increased in the matrix baddic phosphoprotein 2Increased inineralization, bone area; decreased chondrogenesis and increased in the matrix baddic phosphoprotein 2Increased inineralization, bone area; decreased chondrogenesis and increased in the matrix baddic phosphoprotein 2 <t< td=""><td>Col2a1</td><td></td><td>Chondrocytes</td><td>Tamoxifen</td><td>Ai9</td><td>Collagen II-positive chondrocytes give rise to osteoblasts/cytes during</td><td></td></t<>	Col2a1		Chondrocytes	Tamoxifen	Ai9	Collagen II-positive chondrocytes give rise to osteoblasts/cytes during	
Collage between the constraint of the constraint	Col2a1	Collagen, type 2, alpha-1	Chondrocytes	Tamoxifen	Ai9	Induction of recombination without activation of CreERT2 system	(Seime et al., 2015)
Coll2a1 Coll2a1 Coll2a1 Macrophage Fas-Induced Apoptosis (MaFIA)Chordrocytes Macrophages and dendritic cellsmT/mGNo Hindly driven during fracture repair No Fracture Data(Silers et al., 2017)Cikk Coll2a1 Coll2a1cathepsin K Domp1OsteocytesTamoxifienIGF-1No Fracture DataKateere apati No Fracture D	Col2a1	Collagen, type 2, alpha-1	Chondrocytes		Bmp2		(Mi et al., 2013)
Colage between the collage between the collage fash-induced Apoptosis (MaFIA) Chondrocytes and denditic cells mTmG Not highly driven during fracture repair (Stiers et al., 2017)   Cisk catego fash-induced Apoptosis (MaFIA) Macrophage and inductic cells No Fracture Data No Fracture Data No Fracture Data   Dmp1 Dentin matrix acidic phosphoprotein 1 Osteocytes Tamoxilien IGF-1 No Fracture Data Increased mineralization, bone area; decreased chondrogenesis and interalization, bone area; decreased chondrogenesis and interalization; bone area; decreas	Col2a1	Collagen, type 2, alpha-1	Chondrocytes	Tamoxifen	glucocorticoid receptor (GR)		(Tu et al., 2014)
Csftr   Macrophage Fas-Induced Apoptosis (MaFIA)   Macrophages and dendritic cells   No Fracture Data     Clsk   cathepsin K   Osteoclasts   No Fracture Data     Dmp1   Dentin matrix acidic phosphorotein 1   Osteoclytes   IGF-1   No Fracture Data     Grem1   Gremlin 1   Osteochytes   IGF-1   No Fracture Data   (Lau et al., 2016)     ILGra   Interleukin 6 receptor complex   Hepatocytes and immune cells   Fracture Data   (Lau et al., 2016)     Lpg2   Lysozyme   Osteochordroreticular cells   Fracture Data   (Lau et al., 2016)     Lpg7   Lpg8   Myxovirus resistance 1   Osteochordroreticular cells   No Fracture Data   (Dishwitz et al., 2013)     My0D   Mysogenic differentiation 1   Seletelat mycozytes   No Fracture Data   (Dishwitz et al., 2013)     My0D   Myogenic differentiation 1   Seletelat mycozytes   No Fracture Data   (Dishwitz et al., 2013)     My0D   Myogenic differentiation 1   Myogenic cells   More Patientiation 1   (Diskat et al., 2012)     Sex (Sp7)   Osterix   Osteolobalt   Mr1   Deresaed fracture union; increased cellidar proliferation   (El-Hoss et al., 2012)     Sex (Sp7)	Col2a1	Collagen, type 2, alpha-1	Chondrocytes		mT/mG		(Stiers et al., 2017)
Dmp1Dentin matrix acidic phosphoprotein 1OsteocytesTamoxifienIGF-1No Fracture DataDmp1Dentin matrix acidic phosphoprotein 1OsteocytesIGF-1Increased mineralization, bone area; decreased chondrogenesis and osteoclastogenesis and No Fracture Data(Lau et al., 2016)Grem1Gremtin 1Osteochnoreticular cellsFactore phareNo Fracture DataNo Fracture DataLEGraLeptin Receptor complexMesenchyma cellsNo Fracture DataNo Fracture DataLyz2LysozymeOsteoclastogNo Fracture DataNo Fracture DataMy1Myogenic differentiation 1Skeletal myocytesInterferon alpha, interferon batadnMAMLCreased chondrogenesis; prolonged expression of pro-inflamatory cytokines(Dishowitz et al., 2013)My2Myogenic differentiation 1Skeletal myocytesFractine Data(Liu et al., 2014)Osx (Sp7)OsterixOsteoblastNo Fracture Data(Dishowitz et al., 2012)Osx (Sp7)OsterixOsteoblastSteoblastSteolast(Liu et al., 2017)Osx (Sp7)OsterixOsteoblastSteoblastSteolast(decreased facture noino; increased cellular proliferation(El-Hoss et al., 2015)Osx (Sp7)OsterixOsteoblastSteoblastSteoblastSteolast(decreased facture noino; increased cellular proliferation(del al., 2017)Osx (Sp7)OsterixOsteoblastSteoblastSteoblastSteoblast(declastion All al., 2015)Osx (Sp7)OsterixOsteoblastSteoblast </td <td></td> <td></td> <td>3</td> <td></td> <td></td> <td></td> <td>(</td>			3				(
Dmp1   Dentin matrix acidic phosphorotein   Osteocytes   IGF-I   Increased mineralization, bone area; decreased chondrogenesis and osteoclastogenesis   (Lau et al., 2016)     Grem1   Grem1n 1   Osteochondroreticular cells   No Fracture Data   No Fracture Data     LepR   LepIn Receptor   Mesenchymal cells   No Fracture Data   No Fracture Data     Lyzz   Lyzorme   Osteoclasts   No Fracture Data   No Fracture Data     Mx1   Myxovirus resistance 1   Ubiquitous   interferon alpha, interferon beta   dmAML   Decreased chondrogenesis; prolonged expression of pro-inflammador pro-inflamma							
Grent I   Osteocharoreticular cells   osteoclastogenesis   or active Data     Grent I   Interleukin 6 receptro complex   Hepatocytes and immune cells   No Fracture Data     LepR   Leptin Receptor   Mesenchymal cells   No Fracture Data     Lyz2   Lysozyme   Osteoclasts   No Fracture Data     Mx1   Mysorius resistance 1   Ubiquitous   interferon alpha, interferon beta   dnMAML   Decreased chondrogenesis; prolonged expression of pro-inflammatory cytokines   (Dishowitz et al., 2013)     MyoD   Myogenic differentiation 1   Myogenic cells   N1   Decreased chondrogenesis; prolonged expression of pro-inflammatory cytokines   (Liu et al., 2011)     MyoD   Myogenic differentiation 1   Myogenic cells   N1   Decreased fracture union; increased cellular proliferation   (EHoss et al., 2012)     Osx (Sp7)   Osterix   Osteoblast   Smp2   No effect on fracture healing   (Maes et al., 2015)     Osx (Sp7)   Osterix   Osteoblast   Famoxifien   R26R   Expression in hypertiphic chondrogenesis; increased   (Hu et al., 2017)     Osx (Sp7)   Osterix   Osteoblast, Osteoblast   Tamoxifien   R26R   Expression in hypertophic chondrogenesis; increased   (Abou-Khalil et al	•		-	lamoxifien			
Idfa   Interleukin 6 receptor complex   Hepatocytes and immune cells   No Fracture Data     LepR   Leptin Receptor   Mesenchymal cells   No Fracture Data     Ly22   Lysozyme   Ostoclasts   No Fracture Data     Mx1   Myxovirus resistance 1   Ubiquitous   interferon alpha, interferon beta   dnMAML   Decreased chordrogenesis; prolonged expression of pro-inflamantor pr					IGF-I	osteoclastogenesis	(Lau et al., 2016)
LepR   LepIn Receptor   Mesendymal cells   No Fracture Data     Ly22   Lysozyme   Osteoclasts   No Fracture Data     Mx1   Myxovirus resistance 1   Ubiquitous   interferon alpha, interferon beta   dnMAML   Octeocased chordrogenesis; prolonged expression of pro-inflammary cytokines   (Dishwitz et al., 2013)     MyoD   Myogenic differentiation 1   Skeletal myocytes   hAP   Myogenic progenitors are involved in fracture repair when muscle cytokines   (Liu et al., 2011)     MyoD   Myogenic differentiation 1   Myogenic cells   Nf1   Decreased colution; increased cellular proliferation   (El-Hoss et al., 2012)     Osx (Sp7)   Osterix   Osteolast   Steolast   GFP   Angiogenesis is coupled with osteolast precursor invasion   (Meas et al., 2010)     Osx (Sp7)   Osterix   Osteolast   Tamoxifien   K14   Expression in hyperrophic chondrogenesis, coupled with osteolast precursor invasion   (de la Croix Ndong et al., 2015)     Osx (Sp7)   Osterix   Osteolast   Tamoxifien   K14   Expression in hyperrophic chondrogenesis, increased one lining cells during fracture healing   (de la Croix Ndong et al., 2017)     Osx (Sp7)   Osterix   Osteolast   Tamoxifien   R26R   Expressican in hyperrophi							
Lyz2   Lyszyme   Osteoclasts   No Fracture Data     Mx1   Myxovirus resistance 1   Ubiquitous   interferon alpha, intereferon alpha, intereferon alpha, interfero			Hepatocytes and immune cells				
Mx1   Myxovirus resistance 1   Ubiquitous   interferon alpha, interferon beta   dnMAML   Decreased chondrogenesis; prolonged expression of pro-inflammatory cytokines   (Dishowitz et al., 2013)     MyoD   Myogenic differentiation 1   Skeletal myocytes   hAP   cytokines   (Liu et al., 2011)     MyoD   Myogenic differentiation 1   Myogenic cells   Nf1   Decreased fracture union; increased cellular proliferation   (El-Hoss et al., 2012)     Osx (Sp7)   Osterix   Osteoblast   Bmp2   No effect on fracture healing   (McBride-Gagyi et al., 2015)     Osx (Sp7)   Osterix   Osteoblast   GFP   Angogenesis is coupled with osteoblast precursor invasion   (de al c. roix Valon)     Osx (Sp7)   Osterix   Osteoblast   Tamoxifien   R26R   Expression in hypertrophic chondrocytes, osteoblast, osteooytes, and   (Hu et al., 2017)     Osx (Sp7)   Osterix   Osteoblast   Tamoxifien   R26R   Expression in hypertrophic chondrocytes, osteoblast, osteooytes, and   (Hu et al., 2017)     Pax7   Paired box 7   Myogenic cells   Tamoxifien   DTA   Decreased growth factors; decreased SBMP, IGF-1, and FGF-1 expression   (Abou-Khalil et al., 2015)     Pax7   Paired box 7   Myogenic cells	LepR	Leptin Receptor	Mesenchymal cells			No Fracture Data	
MyoDMyogenic differentiation 1Skeletal myocyteshAPoption 1option 1(Liu et al., 2011)MyoDMyogenic differentiation 1Myogenic cellsNf1Decreased fracture union; increased cellular proliferation(El-Hoss et al., 2012)Osx (Sp7)OsterixOsteoblastBmp2No effect on fracture healing(McBride-Gagyi et al., 2015)Osx (Sp7)OsterixOsteoblastGFPAngiogenesis is coupled with osteoblast precursor invasion(Maes et al., 2010)Osx (Sp7)OsterixOsteoblastGFPAngiogenesis is coupled with osteoblast precursor invasion(Maes et al., 2010)Osx (Sp7)OsterixOsteoblastGFPAngiogenesis is coupled with osteoblast precursor invasion(Hu et al., 2017)Osx (Sp7)OsterixOsteoblastTamoxifienR26RExpression in hypertrophic chondrocytes, osteoblasts, osteocytes, and bone lining cells during fracture healing(Hu et al., 2015)Pax7Paired box 7Myogenic cellsTamoxifenDTADecreased growth factors; deceased osteogenesis; increased angiogenesis(Abou-Khaili et al., 2015b)Pax7Paired box 7Myogenic cellsTamoxifenDTADelayed healing; decreased BMP, IGF-1, and FGF-1 expression(Abou-Khaili et al., 2015b)	Lyz2	Lysozyme	Osteoclasts			No Fracture Data	
MyoDMyogenic differentiation 1Myogenic cellsNf1Decreased fracture union; increased cellular proliferation(EI-Hoss et al., 2012)Osx (Sp7)OsterixOsteoblastBmp2No effect on fracture healing(McBride-Gay et al., 2015)Osx (Sp7)OsterixOsteoblastGFPAngiogenesis is coupled with osteoblast precursor invasion(Maes et al., 2010)Osx (Sp7)OsterixOsteoblastMf1Atrophic callus; decreased chondrogenesis(de la Croix Ndong et al., 2015)Osx (Sp7)OsterixOsteoblastTamoxifienR26RExpression in hypertrophic chondrocytes, osteoblasts, osteocytes, and bone lining cells during fracture healing(Hu et al., 2017)Pax7Paired box 7Myogenic cellsTamoxifienDTADecreased growth factres deased osteogenesis; increased angiogenesis(Abou-Khalil et al., 2015a)Pax7Paired box 7Myogenic cellsTamoxifienDTADelayed healing; decreased osteogenesis; increased angiogenesis(Abou-Khalil et al., 2015a)Pax7Paired box 7Myogenic cellsTamoxifienDTADelayed healing; decreased BMP, IGF-1, and FGF-1 expression(Abou-Khalil et al., 2015b)	Mx1	Myxovirus resistance 1	Ubiquitous	interferon alpha, interferon beta	dnMAML		(Dishowitz et al., 2013)
Osx (Sp7)   Osterix   Osteoblast   Bmp2   No effect on fracture healing   (McBride-Gagvi et al., 2015)     Osx (Sp7)   Osterix   Osteoblast   GFP   Angiogenesis is coupled with osteoblast precursor invasion   (Maes et al., 2010)     Osx (Sp7)   Osterix   Osteoblast   McBride-Gagvi et al., 2015)   (Maes et al., 2010)     Osx (Sp7)   Osterix   Osteoblast   Steoblast   (Meltide Cauvier)     Osx (Sp7)   Osterix   Osteoblast   Tamoxifien   R26R   Expression in hypertrophic chondrocytes, osteoblasts, osteocytes, and (Hu et al., 2017)     Osx (Sp7)   Osterix   Osteoblast   Tamoxifien   DTA   Decreased growth factors; deceased osteogenesis; increased (Abou-Khalil et al., 2015a)     Pax7   Paired box 7   Myogenic cells   Tamoxifien   DTA   Delayed healing; decreased BMP, IGF-1, and FGF-1 expression   (Abou-Khalil et al., 2015b)	MyoD	Myogenic differentiation 1	Skeletal myocytes		hAP		(Liu et al., 2011)
Osx (Sp7)   Osterix   Osteoblast   GFP   Angiogenesis is coupled with osteoblast precursor invasion   (Maes et al., 2010)     Osx (Sp7)   Osterix   Osteoblast   Nf1   Atrophic callus; decreased chondrogenesis   (de la Croix Ndong et al., 2015)     Osx (Sp7)   Osterix   Osteoblast   Tamoxifien   R26R   Expression in hypertrophic chondrocytes, osteoblasts, osteocytes, and bone lining cells during fracture healing   (Hu et al., 2017)     Pax7   Paired box 7   Myogenic cells   Tamoxifien   DTA   Decreased growth factors; decreased osteogenesis; increased angiogenesis   (Abou-Khalil et al., 2015a)     Pax7   Paired box 7   Myogenic cells   Tamoxifien   DTA   Delayed healing; decreased BMP, IGF-1, and FGF-1 expression   (Abou-Khalil et al., 2015b)	MyoD	Myogenic differentiation 1	Myogenic cells		Nf1	Decreased fracture union; increased cellular proliferation	(EI-Hoss et al., 2012)
Osx (Sp7) Osterix Osteoblast Nf1 Atrophic callus; decreased chondrogenesis (de la Croix Ndong et al., 2015)   Osx (Sp7) Osterix Osteoblast Tamoxifien R26R Expression in hypertrophic chondrocytes, osteoblasts, osteocytes, and bone lining cells during fracture healing (Hu et al., 2017)   Pax7 Paired box 7 Myogenic cells Tamoxifien DTA Decreased growth factors; decreased osteogenesis; increased angiogenesis (Abou-Khalil et al., 2015a)   Pax7 Paired box 7 Myogenic cells Tamoxifen DTA Delayed healing; decreased BMP, IGF-1, and FGF-1 expression (Abou-Khalil et al., 2015b)	Osx (Sp7)	Osterix	Osteoblast		Bmp2	No effect on fracture healing	(McBride-Gagyi et al., 2015)
Osx (Sp7)   Osterix   Osteoblast   Tamoxifien   R26R   Expression in hypertrophic chondrocytes, osteoblasts, osteocytes, and (Hu et al., 2017)     Pax7   Paired box 7   Myogenic cells   Tamoxifien   DTA   Decreased growth factors; deceased osteogenesis; increased angiogenesis     Pax7   Paired box 7   Myogenic cells   Tamoxifien   DTA   Decreased osteogenesis; increased osteogenesis; incre	Osx (Sp7)	Osterix	Osteoblast		GFP	Angiogenesis is coupled with osteoblast precursor invasion	(Maes et al., 2010)
Osx (Sp7)   Osterix   Osteoblast   Tamoxifien   R26R   Expression in hypertrophic chondrocytes, osteoblasts, osteocytes, and (Hu et al., 2017)     Pax7   Paired box 7   Myogenic cells   Tamoxifien   DTA   Decreased growth factors; deceased osteogenesis; increased angiogenesis     Pax7   Paired box 7   Myogenic cells   Tamoxifien   DTA   Decreased osteogenesis; increased osteogenesis; incre	Osx (Sp7)	Osterix	Osteoblast		Nf1	Atrophic callus; decreased chondrogenesis	(de la Croix Ndong et al., 2015)
Pax7   Paired box 7   Myogenic cells   Tamoxifen   DTA   Decreased growth factors; deceased osteogenesis; increased   (Abou-Khalil et al., 2015a)     Pax7   Paired box 7   Myogenic cells   Tamoxifen   DTA   Decreased growth factors; deceased osteogenesis; increased   (Abou-Khalil et al., 2015a)     Pax7   Paired box 7   Myogenic cells   Tamoxifen   DTA   Delayed healing; decreased BMP, IGF-1, and FGF-1 expression   (Abou-Khalil et al., 2015b)				Tamoxifien		Expression in hypertrophic chondrocytes, osteoblasts, osteocytes, and	
Pax7 Paired box 7 Myogenic cells Tamoxifen DTA Delayed healing; decreased BMP, IGF-1, and FGF-1 expression (Abou-Khalil et al., 2015b)	Pax7	Paired box 7	Myogenic cells	Tamoxifen	DTA	Decreased growth factors; deceased osteogenesis; increased	(Abou-Khalil et al., 2015a)
	Pax7	Paired box 7	Myogenic cells	Tamoxifen	DTA		(Abou-Khalil et al., 2015b)

Driver	Driver Full	Site of Expression	Inducible	Knockout/Reporter	Phenotype	Reference
Prx1	Paired related homeobox 1	Mesenchymal cells		BMP2	Inhibited callus formation in Dkk1+/- mice	(Intini and Nyman, 2015)
Prx1	Paired related homeobox 1	Mesenchymal cells		BMP2	Inhibited early callus formation	(Tsuji et al., 2006)
Prx1	Paired related homeobox 3	Mesenchymal cells		BMP4	Fracture healing was not affected	(Tsuji et al., 2008)
Prx1	Paired related homeobox 1	Mesenchymal cells		BMP7	No effect on fracture healing	(Tsuji et al., 2010)
Prx1	Paired related homeobox 4	Mesenchymal cells	Tamoxifen	GFP; LacZ; Rosa26	Osteochondral progenitor cells can differentiate into chondrocytes and	(Kawanami et al., 2009)
					osteoblasts in fracture callus	
Prx1	Paired related homeobox 1	Mesenchymal cells		Nf1	Decreased chondrogenesis; thickened periosteum	(El Khassawna et al., 2012)
Prx1	Paired related homeobox 2	Mesenchymal cells		R26R	Majority of soft callus cells are derived from MSC	(Murao et al., 2013)
Prx1	Paired related homeobox 1	Mesenchymal cells		RBPjk	Decreased fracture union; decreased progenitor cells	(Wang et al.)
Prx1	Paired related homeobox 1	Mesenchymal cells		Runx1	Decreased chondrogenesis	(Soung et al., 2012)
Prx1	Paired related homeobox 1	Mesenchymal cells		β-catenin	Delayed healing and union	(Jin et al., 2015)
Runx2	Runt-related transcription factor 2	Osteoblast			No Fracture Data	
Sox9	Sox9	Mesenchymal cells	Tamoxifen	R26R	Majority of soft callus cells are derived from MSC	(Murao et al., 2013)
TRAP	tartrate-resistant acid phosphatase	Osteoclasts			No Fracture Data	
Twist2 (Dermo1)	Twist homolog 2	Mesenchymal cells		Yap1	Inhibited chondrogenesis and cartilage deposition	(Deng et al., 2016)
UBC	Human ubiquitin C	Ubiquitous	Tamoxifen	Ai9	Induction of recombination without activation of CreERT2 system	(Seime et al., 2015)
					especially in bone marrow	
VEC	vascular endothelial cadherin	Endothelial		Bmp2	No effect on fracture healing	(McBride-Gagyi et al., 2015)
αSMA	α-Smooth muscle actin	Myofibroblasts	Tamoxifen	Ai9	αSMA positive progenitor cells transition to osteoblasts during fracture	(Grcevic et al., 2012)
					repair	