Table 1: Summary data for studies included in the review. a) biopsy naïve b) prior negative biopsy c) prior positive biopsy

a)

Identifier					Patient population					MRI				Biopsy		
Author, ref	Year	Type of study	Study design	Population investigated	N° of patients	Median age, yr (IQR)	Median PSA, ng/ml (IQR)	Median prostate volume, ml (IQR)	Positive MRI, n/N (%)	Field of strength	Sequences	Endorectal coil	Threshold for target	Target approach (cores per target)	TRUS-Bx Comparator (cores)	Definition of clinically significant PCa
Jambor et al, (35)	2015	Prospective	Paired cohort	Biopsy naïve	55	NR	NR	NR	39	3T	T1, T2, DWI, DCE	No	Likert ≥ 4	MRI-visual-TBx (up to 2)	TRUS-Bx (12)	GS ≥ 3+4
Peltier et al, (36)	2015	Prospective	Paired cohort	Biopsy naïve	110	65.1* (7.1**)	8.4* (6.3**)	49.3* (22.3**)	110	3T	T1, T2, DWI, DCE	Yes	PIRADS ≥ 3	MRI-fusion-TBx (1-4)	TRUS-Bx (12-28)	GS ≥ 7 and/or MCCL ≥ 6mm
Delongchamps et al, (37)	2016	Prospective	Paired cohort	Biopsy naïve	108	65 (60-69)	7.2 (5.6-10.4)	46 (36-62)	108	1.5/3T	T1, T2, DWI, DCE	Yes	PIRADS ≥ 3	MRI-fusion-TBx (3)	TRUS-Bx (12)	GS ≥ 7 or GS = 6 and MCCL ≥ 5mm
De Gorski et al, (38)	2015	Prospective	Paired cohort	Biopsy naïve	232	64* (6.4**)	6.5* (1.8**)	47* (24.3**)	232	1.5T	T1, T2, DWI, DCE	No	Likert ≥ 2	MRI-fusion-TBx (2-3)	TRUS-Bx (12)	GS ≥ 7 or GS = 6 and MCCL ≥ 4mm
Mendhiratta et al, (39)	2015	Prospective	Paired cohort	Biopsy naïve	382	64.5* (8.4**)	6.8* (0.3**)	44 (36-64)	382	3T	T1, T2, DWI, DCE	No	Likert ≥ 2	MRI-fusion-TBx (4)	TRUS-Bx (12)	GS ≥ 3+4
Zhang et al, (40)	2017	Prospective	Paired cohort	Biopsy naïve	224	69 (40-85)	10 (3.6-78.4)	45.5 (22-77)	224	3T	T1, T2, DWI, DCE	No	Likert ≥ 2	MRI-fusion-TBx (3.5*)	Transpereineal-Bx (12)	GS ≥ 7 or GS 6 with 50% involvement of Pca per core
Borkowetz et al, (41)	2017	Retrospective	Paired cohort	Biopsy naïve	133	NR	NR	NR	133	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 2ϕ	MRI-fusion-TBx (7)	Transpereineal-Bx (12)	GS ≥ 3+4
Mariotti et al, (42)	2016	Retrospective	Paired cohort	Biopsy naïve	246	NR	NR	NR	246	3T	T1, T2, DWI, DCE	No	Likert ≥ 3	MRI-fusion-TBx (2-3)	TRUS-Bx (12)	GS = 3+4 with 50% core involvement or GS = 4+3 with 33% involvement
Filson et al, (43)	2016	Prospective	Paired cohort	Biopsy naïve	328	64. (58-69)	5.8 (4.4-8.1)	45 (33-62)	273	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 3	MRI-fusion-TBx (NR)	Transpereineal-Bx (12)	GS ≥ 3+4
Meng et al, (44)	2016	Retrospective	Paired cohort	Biopsy naïve	292	64.4* (8.4**)	6.2* (0.4**)	53.1* (27.2**)	292	3T	T1, T2, DWI, DCE	No	Likert ≥ 2	MRI-fusion-TBx (4)	TRUS-Bx (12)	GS ≥ 3+4

Hansen et al, (56)	2017	Prospective	Paired cohort	Biopsy naïve	807	65 (59-70)	6.5 (4.9-8.8)	42 (30-58)	507	NR	NR	NR	Likert ≥ 3	MRI-fusion/visual-TBx (4)	Transperineal-Bx (26)	GS ≥ 3+4
Borkowetz et al, (46)	2017	Prospective	Paired cohort	Biopsy naïve	214	63 (40-75)	6.22 (1-49)	42 (8-270)	214	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 2 φ	MRI-fusion-TBx (6)	TRUS –Bx (12)	GS ≥ 3+4
Quentin et al, (47)	2014	Prospective	Paired cohort	Biopsy naïve	128	66* (8.1**)	8.7* (8.7**)	54.7* (28.2**)	128	3T	T1, T2, DWI, DCE	No	NR	MRI-fusion-TBx (2)	TRUS-Bx (12)	GS ≥ 3+4
Pokorny et al, (48)	2014	Prospective	Paired cohort	Biopsy naïve	223	63 (57-68)	5.3 (4.1-6.6)	41 (30-59)	142	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 3	MRI-InBore-TBx (2-3)	TRUS-Bx (12)	GS ≥ 3+4; >1 positive core/1 positive core >4mm GS= 3 + 3; >2 positive cores/1 positive core >6mm

* Mean; ** SD; φ PI-RADS v2

b)

Identifier					Patient population					MRI				Biopsy		
Author, ref	Year	Type of study	Study design	Population investigated	N° of patients	Median age, yr (IQR)	Median PSA, ng/ml (IQR)	Median prostate volume, ml (IQR)	Positive MRI, n/N (%)	Field of strength	Sequences	Endorectal coil	Threshold for target	Target approach (cores per target)	TRUS-Bx Comparator (cores)	Definition of clinically significant PCa
Boesen et al, (49)	2017	Prospective	Paired cohort	Prior negative biopsy	206	65 (58-68)	12.8 (8.9-19.6)	NR	189	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 2	MRI-Fusion-TBx (1-2)	TRUS-Bx (10)	GS ≥ 3+4
Hansen et al, (50)	2016	Prospective	Paired cohort	Prior negative biopsy	487	66 (60-71)	9 (6.7-13.4)	56 (40-80)	343	1.5/3T	T1, T2, DWI, DCE	No	PIRADS ≥ 3	MRI-Fusion-TBx (3)	Transperineal-Bx (24)	GS ≥ 3+4
Brock et al, (51)	2015	Prospective	Paired cohort	Prior negative biopsy	168	64 (59-70)	9.2 (6.7-13.4)	55.4 (42-80)	144	3T	T1, T2, DWI, DCE	No	Score ≥8 (1 to 15-point scale)	MRI-Fusion-TBx (2.7*)	Transperineal-Bx (12.7*)	GS ≥ 3+4
Meng et al, (44)	2016	Retrospective	Paired cohort	Prior negative biopsy	172	65.9* (7.5**)	8.9* (0.7**)	76.9* (44.4**)	172	3T	T1, T2, DWI, DCE	No	Likert ≥ 2	MRI-fusion-TBx (4)	TRUS-Bx (12)	GS ≥ 3+4
Mendhiratta et al, (52)	2015	Retrospective	Paired cohort	Prior negative biopsy	161	64.9* (7.5**)	8.9* (0.7**)	72.5* (3.22**)	161	3T	T1, T2, DWI, DCE	No	NR	MRI-fusion-TBx (3-4)	TRUS-Bx (12)	GS ≥ 3+4
Lian et al, (53)	2017	Prospective	Paired cohort	≥ Prior negative biopsy	101	68.9* (8.1**)	10.8* (6.1**)	42.1* (15.3**)	101	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 2	MRI-fusion-TBx (4.2*)	TRUS-Bx (12)	GS ≥ 7 or GS 6 with MCCL ≥ 4 mm
Filson et al, (43)	2016	Prospective	Paired cohort	Prior negative biopsy	324	65.7 (59.3-70.2)	7.6 (5-11.5)	57.7 (39.8-83.5)	265	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 3	MRI-fusion-TBx (NR)	Transpereineal-Bx (12)	GS ≥ 3+4
Borkowetz et al, (54)	2015	Prospective	Paired cohort	Prior negative biopsy	195	66 (50-83)	12.2 (1.2-86.6)	52 (15-220)	195	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 2 φ	MRI-fusion-TBx (12.4*)	TRUS-Bx (9.2*)	GS ≥ 3+4 or GS = 6 with 50% involvement of PCa in more than two cores
Borkowetz et al, (41)	2017	Retrospective	Paired cohort	Prior negative biopsy	445	NR	NR	NR	133	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 2 φ	MRI-fusion-TBx (7)	Transpereineal-Bx (12)	GS ≥ 3+4
Mariotti et al, (42)	2016	Retrospective	Paired cohort	Prior negative biopsy	143	NR	NR	NR	143	3T	T1, T2, DWI, DCE	No	Likert ≥ 3	MRI-fusion-TBx (2-3)	TRUS-Bx (12)	GS = 3+4 with 50% core involvement or GS = 4+3 with 33% involvement

* Mean; ** SD; φ PI-RADS v2

c)

Identifier		Type of study	Study design	Population investigated	Patient population					MRI				Biopsy		Definition of clinically significant PCa
Author, ref	Year				N° of patients	Median age, yr (IQR)	Median PSA, ng/ml (IQR)	Median prostate volume, ml (IQR)	Positive MRI, n/N (%)	Field of strength	Sequences	Endorectal coil	Threshold for target	Target approach (cores per target)	TRUS-Bx Comparator (cores)	
Meng et al, (44)	2016	Retrospective	Paired cohort	Prior positive biopsy	137	63.3* (7.7**)	5.4* (0.4**)	53.4* (42.2**)	137	3T	T1, T2, DWI, DCE	No	Likert ≥ 2	MRI-fusion-TBx (4)	TRUS-Bx (12)	GS ≥ 3+4
Tran et al (55)	2016	Retrospective	Paired cohort	Prior positive biopsy	207	66.7 (61.4-70.4)	5.9 (4.3-8.8)	42 (31-57)	207	3T	NR	Yes	NR	MRI-fusion-TBx (2)	TRUS-Bx (14)	NR
Filson et al, (43)	2016	Prospective	Paired cohort	Prior positive biopsy	390	65.1 (59.6-69.5)	4.8 (3-6.9)	43 (32.3-60.4)	287	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 3	MRI-fusion-TBx (NR)	Transpereineal-Bx (12)	GS ≥ 3+4
Ma et al, (56)	2017	Retrospective	Paired cohort	Prior positive biopsy	103	70 (66-74)	5.4 (3.2-7.4)	55 (40-80)	103	3T	T1, T2, DWI, DCE	Yes	PIRADS ≥ 3 ф	MRI-fusion-TBx (3)	TRUS-Bx (12)	GS ≥ 3+4
Pessoa et al, (57)	2017	Prospective	Paired cohort	Prior positive biopsy	105	67 (48-81)	7.5 (1.2-10)	53 (20-123)	87	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 2	MRI-Visual-TBx (2-6)	TRUS-Bx (12)	GS ≥ 7 and/or core involvement >50%
Frye et al, (58)	2017	Retrospective	Paired cohort	Prior positive biopsy	128	61.7* (6.6**)	5.69* (4.19**)	NR	128	3T	T1, T2, DWI, DCE	Yes	≥ Low suscpicion (low-moderate-high)	MRI-fusion-TBx (NR)	TRUS-Bx (12)	GS ≥ 3+4
Borkowetz et al, (59)	2018	Retrospective	Paired cohort	Prior positive biopsy	83	67 (63-72)	6.9 (5.5-9.3)	44 (32-63)	83	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 2 ф	MRI-fusion-TBx (6)	TRUS-Bx (12)	GS ≥ 3+4
Okoro et al, (60)	2015	Retrospective	Paired cohort	Prior positive biopsy	50	61.4* (7.7**)	5.34* (2.6**)	NR	50	3T	T1, T2, DWI, DCE, MRSI	Yes	≥ Low suscpicion (low-moderate-high)	MRI-fusion-TBx (NR)	TRUS-Bx (12)	NR
Lai et al, (61)	2017	Retrospective	Paired cohort	Prior positive biopsy	76	62.5* (7**)	5.1* (2**)	NR	76	3T	T1, T2, DWI, DCE	No	PIRADS ≥ 3 ф	MRI-fusion-TBx (Mean 2.3)	TRUS-Bx (12)	GS ≥ 3+4
Pepe et al, (62)	2017	Prospective	Paired cohort	Prior positive biopsy	60	66* (Range 63-68)	NR	NR	26	3T	T1, T2, DWI, DCE	Yes	PIRADS ≥ 3	MRI-fusion-TBx (2)	TRUS-Bx (NR)	GS ≥ 3+4

* Mean; ** SD; ф PI-RADS v2