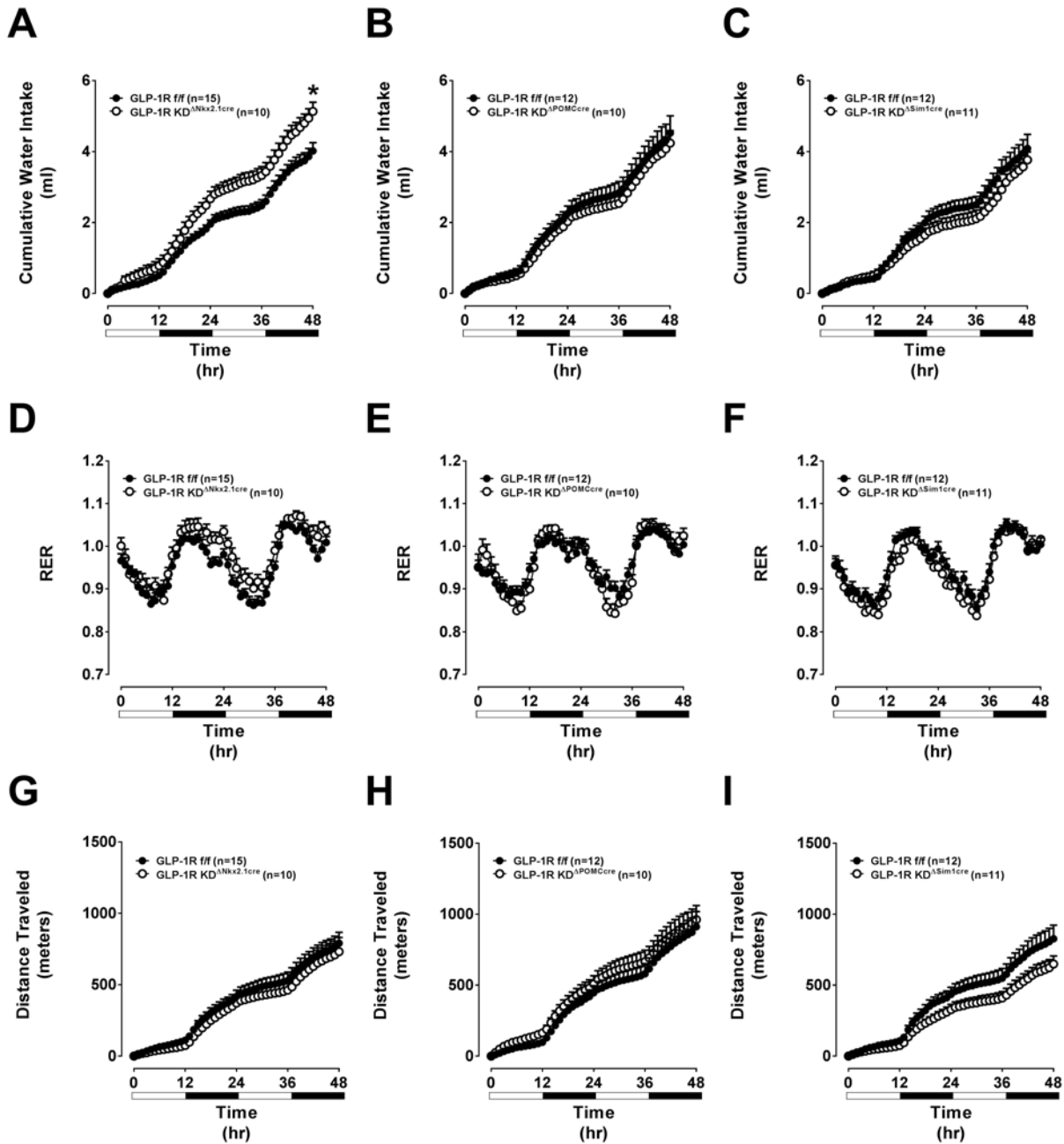SUPPLEMENTARY DATA

**Supplementary Table 1. Analysis of covariance (ANCOVA) for fat mass and 48-h energy expenditure in GLP-1RKD$^{\Delta Nkx2.1cre}$ vs. GLP-1R$^{f/f}$ mice.** ANCOVA was performed using the Mouse Metabolic Phenotyping Center (MMPC) web-based Multiple Linear Regression program (http://www.mmpc.org/shared/regression.aspx). The response variables were fat mass and average 48-h energy expenditure, and the covariates were total body mass and average 48-h food intake. Analyses were performed for chow diet and HFD studies where relevant. Data are presented as mean±SEM for n=8-15 mice per group.

| Analysis of covariance (ANCOVA) | | | |
|---|---|---|---|
| **Chow Diet** | | | |
| **Response Variable = Fat Mass** **Covariate = Total Body Mass** | | | |
| | **GLP-1R f/f** | **GLP-1R KD$^{\Delta Nkx2.1cre}$** | **p-value** |
| Overall Mean | 3.44±0.314 | 2.54±0.351 | 0.06642 |
| Group Means | 3.43±0.314 | 2.56±0.351 | 0.07735 |
| **Response Variable = 48-h Energy Expenditure** **Covariate = 48-h Food Intake** | | | |
| | **GLP-1R f/f** | **GLP-1R KD$^{\Delta Nkx2.1cre}$** | **p-value** |
| Overall Mean | 7.20±0.201 | 7.81±0.252 | 0.0391 |
| Group Means | 7.05±0.191 | 7.54±0.234 | 0.0162 |
| **Response Variable = 48-h Energy Expenditure** **Covariate = Total Body Mass** | | | |
| | **GLP-1R f/f** | **GLP-1R KD$^{\Delta Nkx2.1cre}$** | **p-value** |
| Overall Mean | 7.00±0.173 | 7.61±0.212 | 0.03721 |
| Group Means | 7.05±0.173 | 7.54±0.211 | 0.04399 |
| **High Fat Diet** | | | |
| **Response Variable = 48-h Energy Expenditure** **Covariate = Total Body Mass** | | | |
| | **GLP-1R f/f** | **GLP-1R KD$^{\Delta Nkx2.1cre}$** | **p-value** |
| Overall Mean | 9.25±0.213 | 10.56±0.242 | 0.0007376 |
| Group Means | 9.38±0.205 | 10.38±0.232 | 0.0039170 |

SUPPLEMENTARY DATA

**Supplementary Figure 1. Chow diet-fed GLP-1RKD$^{\Delta Nkx2.1cre}$ mice exhibit elevated water intake but normal RER and locomotor activity compared to GLP-1R$^{f/f}$ controls.** The values are mean±SEM and represent cumulative 48-h water intake, RER and locomotor activity in chow diet-fed **(A, D and G)** GLP-1RKD$^{\Delta Nkx2.1cre}$ (n=10), **(B, E and H)** GLP-1RKD$^{\Delta POMCcre}$ (n=10) and **(C, F and I)** GLP-1RKD$^{\Delta Sim1cre}$ (n=11) mice compared to GLP-1R$^{f/f}$ controls (n=12-15). Locomotor activity is expressed as cumulative distance traveled. *p<0.05 vs. GLP-1R$^{f/f}$.

**Supplementary Figure 2. HFD-fed GLP-1R KD$^{\Delta Nkx2.1cre}$ mice exhibit elevated water intake but normal RER and locomotor compared to GLP-1R$^{f/f}$ controls.** The values are mean±SEM and represent cumulative 48-h water intake, RER and locomotor activity in HFD-fed **(A, D and G)** GLP-1RKD$^{\Delta Nkx2.1cre}$ (n=11), **(B, E and H)** GLP-1RKD$^{\Delta POMCcre}$ (n=8) and **(C, F and I)** GLP-1RKD$^{\Delta Sim1cre}$ (n=11) mice compared to GLP-1R$^{f/f}$ controls (n=12-14). Locomotor activity is expressed as cumulative distance traveled. *p<0.05 vs. GLP-1R$^{f/f}$.